# ZERO WASTE ALLIANCE IRELAND

## *Towards Sustainable Resource Management*

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# Submission by Zero Waste Alliance Ireland to the European Commission in Response to the Commission's Call for Evidence on a New Policy Initiative and a New Agenda for Cities and Urban Areas

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## 1.  INTRODUCTION

### 1.1  Need for a New Policy Initiative and a New Agenda for Cities and Urban Areas

In 2021, 39% of the EU population lived in cities and 36% in towns and suburbs, so that approximately 75% of people in the European Union live in cities and other urban areas; and this proportion which is expected to grow to 84% by 2050.

In the EU there are close on 700 cities with more than 50 000 inhabitants in each, and nearly 8,000 towns, from small to medium sizes.

Cities are considered to be the economic drivers of the EU, as they offer people a wider range of opportunities than available in rural areas, not only in the core areas of these cities, but very often in their surrounding urban areas, providing access to essential services and offering the possibility of a high quality of life. Cities are essential for the delivery of EU policies, legislation, programmes and projects at local level; while, at the same time, cities and other urban areas experience a concentration of challenges which require significant investment.

Cities are at the forefront for implementing innovative solutions, designing and delivering services, improving safety, and planning and regulating the built environment and public space.

Through European cooperation, cities should be benefit from economies of scale, so that, as cities begin to pool their resources, along with co-financing and joint development of mutually beneficial projects, addressing the common challenges can be performed more efficiently.

The initiative to which we are responding in this submission is intended to propose a new EU agenda for cities and urban areas which will streamline and integrate all of the existing supports for cities, while taking into account and

building on existing, recent and current EU initiatives and instruments. The initiative is planned to strengthen the EU's ambition for cities by improving the ways in which the issues and concerns which cities are currently experiencing and facing are can be better integrated into future EU policymaking.

It is the European Commission's intention to propose an ambitious policy agenda for cities, in order to provide a coherent vision for the future of cities, especially in the policy areas of housing, climate action, digitalisation, mobility, social inclusion and equality; and this policy should also harness the potential of cities for innovation and competitiveness.

It is our belief, and therefore our observation, that this proposed new policy agenda should have protection of the environment and biodiversity as one of its principal or key objectives, together with ensuring clean air and water, avoidance of waste, maximisation of re-use, repairing and recycling, and the creation of cities and urban areas which are environmentally and socially sustainable, and which would provide the best possible conditions for the well-being of their residents.

## 1.2   Context and Background

In 2021, 39% of the EU population lived in cities and 36% in towns and suburbs, so that approximately 75% of the European Union's population live in cities and urban areas, and this proportion is expected to grow to 84% by 2050. Large metropolitan regions such as Stockholm, Dublin, Bordeaux, Toulouse, Lyon, and Göteborg are projected to see significant population increases in the coming years. The fastest growing regions such as Gießen (Germany), Valletta (Malta), and Palma de Mallorca (Spain) are projected to see relative increases of over 25% in their populations between 2023 and 2051.[1]  These projected population changes are shown in **Figure 1.2** below.

In the EU there are close on 700 cities with more than 50,000 inhabitants in each, and nearly 8,000 towns, from small to medium sizes.

Cities are considered to be the economic drivers of the EU, as they offer people a wider range of opportunities than available in rural areas – in the core areas of these cities, and often in their surrounding areas – providing access to essential services and offering the possibility of a high quality of life. Cities are essential for delivering on EU policies and legislation at local level; while, at the same time, cities and other urban areas experience a concentration of challenges which require significant investment.

The governance of EU cities is a complex interplay between various levels and actors, including the European Commission, national governments, regional

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[1]   https://ec.europa.eu/eurostat/statistics-explained/index.php

authorities, and the cities themselves (we address this issue in sections 3.2 and 3.3.2 below).  It involves both multilevel governance and a multi-stakeholder approach to ensure effective and resilient urban frameworks. Key principles include shared leadership, trust and commitment, efficient and flexible approaches, inclusivity and respect for diversity.



**Projected population change in selected metropolitan regions, 2023–50**
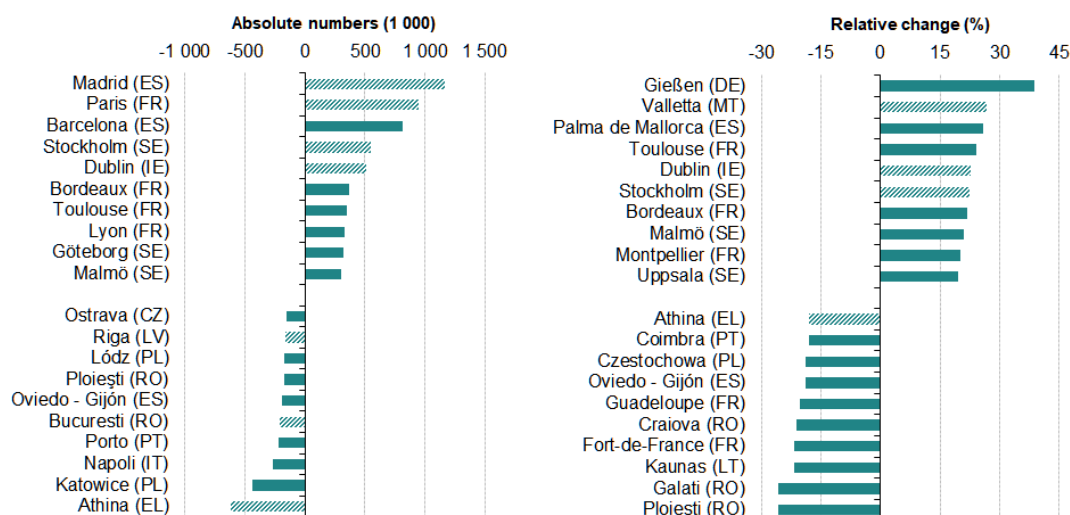
Note: based on population projections for the period from 1 January 2021 to 1 January 2051. The figure shows the 10 metropolitan regions with the biggest increases/decreases in population numbers in absolute and relative terms. Capital city metropolitan regions are presented with a shaded pattern.
*Source*: Eurostat (online data codes: proj_19rp3 and proj_19np)

**Figure 1.2    Projected population change in selected metropolitan regions, 2023–50.**
**Source: Eurostat (proj_19rp3) and (proj_19np).**
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Urban-rural_Europe_-_population_projections

Cities are at the forefront for implementing innovative solutions, designing and delivering services, improving safety, and planning and regulating the built environment and public space.  Most of today's challenges are spread across administrative borders, and by working at the level of metropolitan areas, and by sharing experience and solutions across a number of areas, European cities and city regions can best develop innovative solutions which will benefit the continent's more extensive urban areas and EU Member States as a whole.

Through pan-European Union cooperation, cities and urban areas should be able to benefit from economies of scale, so that, as they begin to pool their resources, along with co-financing and joint development of mutually beneficial projects, addressing the common challenges can be performed more efficiently.

## 1.3. Recent and Current EU Policies and Initiatives on Cities, Urban Areas and Urbanisation

### 1.3.1 An Urban Agenda for the EU

The need for an Urban Agenda for the EU was realised as far back as 2016, when the *Pact of Amsterdam* was signed on 30 May that year.**[2]** This key document stated that in order to realise the full potential of the European Union and deliver on its strategic objectives, an Urban Agenda must involve urban authorities in achieving better regulation, along with improved funding and knowledge.

There was an understanding that EU legislation is to a large extent implemented in cities and other urban areas, and the legislation has direct and indirect implications for urban authorities. Furthermore, EU legislation sometimes has conflicting impacts, and its implementation at local level can be difficult.

Urban Authorities are among the key beneficiaries of EU funding, but access to existing funding can be administratively burdensome, and therefore the proposed Urban Agenda for the EU should aim to improve accessibility and coordination of existing funding possibilities and to contribute to their simplification.

Knowledge on how urban areas evolve and develop was seen as fragmented, and it was proposed that the successful experiences of some cities should be better diffused and exploited. The Urban Agenda therefore aimed to develop a better knowledge base of urban-related policies and more efficient exchange of good practices and their implementation.

The scope of the Urban Agenda focused specifically on three area of EU policymaking and implementation:

- Better regulation;
- Better funding; and,
- Better knowledge.

Thematic Partnerships of European cities were established almost a decade ago, representing various governmental levels and stakeholders, to provide the key delivery mechanism in and for the Urban Agenda for the EU:

- The **Pilot Partnerships** dealt with the inclusion of migrants and refugees, affordable housing, air quality, and urban poverty (The '**Amsterdam Partnerships**');

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**[2]** Establishing the Urban Agenda for the EU – 'Pact of Amsterdam' – Agreed at the Informal Meeting of EU Ministers Responsible for Urban Matters on 30 May 2016 in Amsterdam, The Netherlands.

- The '**Bratislava Partnerships**' **launched** during the Slovakian presidency in 2016, worked on circular economy, digital transition, jobs and skills in the local economy, and urban mobility;

- The third generation of partnerships, established in 2017 (**'Malta Partnerships'**), consisted of Partnerships on climate adaptation, energy transition, responsible and innovative public procurement, and sustainable use of land and nature-based solutions; and,

- The most recent generation, launched in 2019 ('**Vienna Partnerships**') consisted of the Cities' Partnerships on Culture and Cultural Heritage and Security in Public Spaces.

### 1.3.2 Cities and Urban Development

The Urban Agenda has been developed into the major topic of "*Cities and Urban Development*" under the EU Regional and Urban Development programme, in which the priority themes for EU cities include:

- Air quality;
- Circular economy;
- Climate adaptation;
- Culture and heritage;
- Digital transition;
- Energy transition;
- Housing;
- Inclusion of migrants and refugees;
- Innovative and responsible public procurement;
- Jobs and skills in the local economy;
- Sustainable use of land and nature-based solutions;
- Urban mobility and accessibility; and,
- Urban poverty.[3]

Funding of projects under the above themes is available through the following EU financial programmes:

- o InvestEU Fund and the InvestEU Portal;
- o European Structural and Investment Funds;
- o Horizon 2020;

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[3] https://commission.europa.eu/eu-regional-and-urban-development/topics/cities-and-urban-development_en

    o   LIFE (EU's funding instrument for the environment and climate action);

    o   Urban Innovative Actions (identification and testing of innovative solutions for sustainable urban development);

    o   European Investment Advisory Hub;

    o   European Investment Advisory Hub (from end of 2021: InvestEU Advisory Hub);

    o   URBACT (helping cities to develop an integrated set of actions for sustainable change); and,

    o   URBIS.

In addition to the above programmes, the Commission organises and participates in the following initiatives within the EU and at international level, addressing cities' needs.

### 1.3.2.1     *The EU Urban Development Network*

Between 2014 and 2020, the European Regional Development Fund allocated €15 billion to support integrated strategies for sustainable urban development, empowering around 900 cities across the EU to implement these strategies. The Urban Development Network (UDN) supports information exchange between cities involved in integrated Sustainable Urban Development and in Urban Innovative Actions. The UDN also promotes a dialogue on Sustainable Urban Development among the Commission, cities and other stakeholders.

### 1.3.2.2     *Smart Cities*

Solutions bringing together different policy fields and technology sectors in the framework of the green and digital transitions will help cities to reduce their environmental impact and offer better lives for citizens. The Smart cities and Communities programme builds on the experience of 18 large-scale and cross-sectoral **Lighthouse Projects** [4] and is supported by the **Smart Cities Marketplace** [5], an interactive platform for knowledge exchange, capacity building and matching financing options across all sectors.

Sustainable transportation and mobility is one of the key action areas addressed by the Smart Cities programme under the CIVITAS initiative of sustainable and smart mobility for everyone funded under the EU's Horizon 2020 and Horizon Europe's Research and Innovation programmes; and we provide a number of suggestions and recommendations for this action area in section 3.4 below.

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[4] https://smart-cities-marketplace.ec.europa.eu/news-and-events/news/2018/lighthouse-cities-light-way-new-manifesto

[5] https://smart-cities-marketplace.ec.europa.eu/projects-and-sites

In Ireland, Limerick is a **Lighthouse City** [6], one of only two in the EU, focused on creating a sustainable urban ecosystem by reducing its carbon footprint and demonstrating innovative technologies.  This designation comes with European funding and is part of the Horizon 2020 programme.  Limerick aims to become Ireland's first *Positive Energy City*, generating more energy than it consumes. Limerick also participates the **+CityXChange** project with other cities, including Trondheim in Norway, to develop demonstration projects on sustainability and citizen engagement.

### *1.3.2.3       +CityXChange*

+CityxChange [7] (Positive City ExChange) is a smart city project that has been granted funding from the European Union's Horizon 2020 research and innovation programme in the call for '*Smart cities and communities.'* The Norwegian University of Science and Technology (NTNU) is the host and leads the +CityxChange consortium together with the Lighthouse Cities, which include Trondheim Kommune in Norway, and Limerick City and County Council in Ireland.[8]

The project combines *Prototyping the Future through Integrated Planning and Design*; *Enabling the Future through Creation of a Common Energy Market*; and *Accelerating the Future through CommunityxChange* with all stakeholders of the cities.

The project anticipates that new forms of integrated spatial, social, political, economic, regulatory, legal, and technological innovations will deliver citizen observatories, innovation playgrounds, regulatory sandboxes, and *Bold City Visions* to engage civil society, local authorities, industry, and RTOs to scale up from PEBs to PEBs to Positive Energy Cities, supported by a distributed and modular energy system architecture that goes beyond nZEB.

### *1.3.2.4       Covenant of Mayors for Climate and Energy*

Since its launch in 2008, the Covenant of Mayors for Climate and Energy [9] has brought together local and regional authorities which voluntarily commit to implementing the EU's climate and energy objectives on their territories.  Not only did the initiative introduce a first-of-its-kind bottom-up approach to energy and climate action, but its success quickly went beyond expectations.  This initiative currently includes over 11,000 signatories representing 341 million citizens.

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[6]  https://smart-cities-marketplace.ec.europa.eu/projects-and-sites/projects/cityxchange/cityxchange-limerick

[7]  https://cityxchange.eu/

[8]  https://cordis.europa.eu/project/id/824260

[9]  https://eurocities.eu/projects/covenant-of-mayors/

Since 2015, the signatories have pledged to reduce $CO_2$ emissions by at least 40% by 2030 and to adopt an integrated approach to tackling mitigation and adaptation to climate change.  Since 2022, an additional commitment on tackling energy poverty is also part of the Covenant.  Kharkiv, Ukraine's second-largest city and just 40 kilometres from the Russian border, and constantly under attack by Russia, is a member of the Covenant of Mayors for Climate and Energy.[10]

The Covenant is supported by the European Commission, and it brings together thousands of local authorities which want to secure a better future for their citizens. By joining the initiative, they voluntarily commit to implementing EU climate and energy objectives.

One of the Covenant's recent activities was a webinar held only a few weeks ago, on 06 May 2025, hosted by the EU Covenant of Mayor and Climate Alliance, and co-funded by Interreg Central Europe, to demonstrate the innovative approaches taken by four highly diverse municipalities across Europe to address the ever growing challenge of extreme heat.[11]

### *1.3.2.5 Green City Accord*

Launched in 2020, the Green City Accord (GCA)[12] encourages cities to take further action to protect the environment and thereby to make their cities greener, cleaner, and healthier places to live in.

Signatories commit to achieving five goals (on air quality, water quality/efficiency, nature and biodiversity protection, waste and noise pollution) by 2030.  The Green City Accord also supports the implementation of relevant EU environment legislation at local level.  Many of the measures cities are taking to meet their 2030 GCA goals will also support climate adaptation and mitigation.

### *1.3.2.6 City Awards – European Green Leaf*

The European Green Leaf is awarded annually to cities that are committed to further environmental improvement.  The European Green Leaf Award is open to all towns and cities from the EU Member States with a population of 20,000 and up to 99,999 inhabitants.  The award also recognises the sustainable efforts of smaller cities (less than 100.000 habitants).

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[10]  https://eurocities.eu/stories/city-heroes-ihor-terekhov-leading-a-city-at-war/

[11]  https://eu-mayors.ec.europa.eu/en/Local-Actions-to-Address-Extreme-Heat

[12]  https://eurocities.eu/projects/green-city-accord/

### 1.3.2.7    Living-in.EU Movement

Living-in.EU Movement[13] is a collaborative platform for cities and communities to accelerate their digital transformation in the 'European way' (citizen-centric, ethically and socially responsible data usage, open and interoperable standards).

This Movement iss an EU initiative for local and regional leaders who believe that technology can help them make their town, city, or region a better place to live, and who believe in European cooperation and values.  It enables collaboration among cities and regions to make sure that these do not work in isolation, and that smart city strategies can be shared, and solutions re-used.

The Movement includes **Eurocities**, **Open and Agile Smart Cities** (OASC)[14], and the **European Network of Living Labs** (ENoLL)[15]; it is supported by the European Commission and the EP Committee of the Regions, and it was launched in December 2019 by the Finnish Presidency of the EU.  The aim is to scale up the use of data technology to tackle a range of interconnected challenges, including urban mobility, energy efficiency, and digital public services, while ensuring environmental sustainability in line with the European Green Deal.

The European Network of Living Labs (ENoLL) is an international non-profit association, which aims to promote and enhance user-driven innovation systems, as part of the Living Labs concept globally.  ENoLL facilitates knowledge exchange, joint actions, and project partnerships among its +480 members, advocating for and promoting EU policies, promoting Living Labs and enabling their implementation worldwide.  One of the Network's relevant publications focuses on solutions for water-related challenges.[16]

### 1.3.2.8    International Urban Policy

At global level, the EU supports sustainable urban development through various engagements and initiatives.  In 2016, the EU participated in **Habitat III**, the United Nations Conference on Housing and Sustainable Urban Development, and during this conference, the New Urban Agenda was adopted by UN Member States.  In response, the EU made voluntary commitments to support the implementation of the New Urban Agenda at the EU level by:

- Developing a global, people-based definition of cities and settlements;

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[13] https://living-in.eu/

[14] https://oascities.org/

[15] https://enoll.org/

[16] Water-Mining-Living-Labs Brochure Real-world Solutions for Water Challenges: The WATER-MINING Living Lab Approach – Creating the Conditions for Successful Water-oriented Living Labs in Europe; 03-Feb-2025.

- Delivering on the Urban Agenda for the EU;

- Fostering global city to-city cooperation via the International Urban Cooperation programme; and,

- The EU also contributes to the delivery of the Sustainable Development Goals, notably Goal 11 on sustainable cities and communities, and to the localisation of SDGs.

### *1.3.2.9         URBAN2030 - Localising the Sustainable Development Goals*

The URBAN2030-II Project aims at fostering the achievement of SDGs in European cities and regions.  It focuses on providing methodological support and inspiration for the design and implementation of Sustainable Development Goals Voluntary Local Reviews.  It builds on the knowledge and experience gained in the URBAN2030 project (2018-2020) developed with the support of the EU Directorate General for Regional and Urban Policy.

### *1.3.2.10        The Community of Practice on Cities*

The Community of Practice on Cities is an initiative of the European Commission, open to cities and networks of cities, international and Intergovernmental Organisations and research bodies.  The Community of Practice – CITIES (CoP-CITIES) empowers cities, city networks, academia and NGOs to share knowledge and expertise on urban issues, to anticipate potential challenges, and to generate scientific evidence for effective urban policies.

The Community contributes towards more sustainable, resilient, inclusive cities, able to improve mobility, to provide affordable housing, to deal with ageing populations and to meet healthcare demands, while taking advantage of digital innovations.[17]

Its scope is to map and integrate available scientific knowledge of the EU Joint Research Centre (JRC) and the expertise of DG REGIO on cities, and to anticipate needs for knowledge on cities-related issues and urban policy objectives in a holistic way.

### 1.3.3  Our Preliminary Observations on the above Programmes

It will be clear from the above summarised list (which does not include sub-programmes and projects) that there is a very large and comprehensive range of activities supported by the European Commission under the general theme of Cities and Urban Development.  Many of the programmes and projects are environmental, focussed on sustainability, the circular economy, and efficiency in using materials and energy.  There is a degree of possible overlap and duplication

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[17]  https://knowledge4policy.ec.europa.eu/territorial/community-of-practice-cities_en

but we suggest that this is not harmful, and does not constitute a waste of resources, as there would be a benefit in having a selection of programmes and possible projects to suit particular circumstances, needs and geographies.

The Commission's proposed EU agenda for cities will face a major challenge in wishing to streamline and integrate all of these existing supports for cities; but from our perspective we would like to see no reduction in scope or funding of programmes or supports for environmental issues which are the principal focus of our own aims and activities, especially:

  i)     waste elimination at source;

  ii)    efficiency in the use of materials, energy and water;

  iii)   reusing, repairing and recycling;

  iv)   implementation of the circular economy;

  v)    ensuring a just transition to real environmental and social sustainability;

  vi)   improving peoples' quality of life;

  vii)  sustaining a healthy diet for a healthy planet and healthy people;

  viii) improving personal mobility;

  ix)   mitigating climate change, and developing climate resilience;

  x)    designing and implementing local actions to address the growing problem of extreme heat affecting many of Europe's cities;

  xi)   making the widest possible range of information and data more accessible to NGOs and citizens;

  xii)  greater transparency and accountability in government (including city administrations) in all of their activities which have an environmental impact;

  xiii) advocating nature-based solutions to current problems; and,

  ix)   advocating for radical changes in the current economic system which is the cause of so many environmental problems.

We are also aware that there is currently a significant adverse reaction in several EU Member States and in the European Parliament against current and future environmental regulations and policies, and the most recent statement from the Commission promotes "competitiveness" as equally important (if not more important) than protection of the environment.  Overall, there is a shift away from science-based policymaking in the new EU mandate, setting a worrying trend which weakens nature protection.

As part of the third omnibus package, the European Commission on 14 May 2025 published a proposal outlining sweeping revisions, or "simplifications", of the Common Agricultural Policy (CAP), which if implemented would risk dismantling vital environmental protections without evidence or impact assessment.[18]

Farmers across Europe are facing the severe impacts of the climate, nature, and pollution crisis, but instead of strengthening environmental standards to support farm resilience, the proposed changes would further weaken the few mandatory green measures left following the last "simplification".  It is our submission that this trend is a matter of serious concern.

However, NGOs from all countries, acting individually or through the European Environment Bureau (of which ZWAI is a member), are challenging these trends, and demonstrating how environmental threats, from loss of biodiversity to climate change, are very real and increasing in extent and severity.

One of the aims of our submission is to identify programmes and policies which we consider should be supported, continued, and perhaps extended by means of increased funding.  ZWAI has already produced submissions on all of the above-listed issues, and we will refer to these in this submission.

We will also envision how cities should be organised and maintained in the future, as places in which to live and work healthily, producing no wastes, and with a net-zero impact on climate; and with access to nature by the growth of mini-forests and easy accessibility to wilder areas of undamaged natural environment.

## 1.4   Challenges Faced by Cities

Some of the principal challenges faced by cities, and to which we will refer in our response to this call for evidence include:

- Defining the appropriate level of population density;

- Providing suitable, secure, affordable and safe housing and living spaces, designed to foster the growth of communities and civic action; and to enable the flowering of arts and creativity;

- Avoiding the creation of heat islands;

- Providing access to nearby green spaces for everyone;

- Developing and implementing climate policies and climate action at city level, especially in countries where national governments are under commercial and industrial influence;

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[18]  https://eeb.org/nature-and-climate-protection-takes-another-major-hit-in-eu-proposal-to-simplify-agricultural-policy/  and
https://ec.europa.eu/commission/presscorner/detail/en/ip_25_1205

- Providing the infrastructure for sustainable mobility (including safe walking and cycling) and transportation (personal and freight) and designing ways to free people from car dependency, eliminating road traffic congestion, and eliminating heavy goods vehicles from the centres of cities and towns;

- Envisioning potable clean water supply as a civic right, and using water as an urban benefit (and not for private profit); while ensuring that wastewater is reused, that treated residual wastewater (including its constituents) is a renewable resource, and its disposal does not harm the environment;

- Addressing in a sustainable way the problem of waste generation, taking civic responsibility for the collection of discarded materials and objects, ensuring that reuse, repairing and recycling are prioritised and achieved; eliminating as far as possible the disposal of discarded materials by incineration or mass burning;

- Addressing the unique problems faced by Ukrainian cities, under near constant bombardment and destruction, resulting in the generation of enormous quantities of debris from destroyed buildings and vehicles; and the associated challenge of how to replenish materials (for example, the hundreds of thousands of windows fragmented by shock waves or high-pressure blast waves caused by the detonation of high explosive targeted munitions launched from aircraft operating close to Ukraine's borders);

- The impact of digitalisation, and how it can be used to improve life in cities; but, if misused, can lead to social isolation and division;

- Addressing the need to provide for improved social inclusion, diversity and equality; and,

- The need to achieve good governance (transparent and free from corruption) and adequate financing (compare cities in EU Member States).

## 1.5 Some Examples of How Cities Have Confronted These Challenges

In our submission, we can quote from the many examples of successful projects where cities have been improved, and the voices of citizens taken into account in decision making. Examples can be found in nearly all of the programmes and projects listed in sections 1.3.2.1 to 1.3.2.10 above.

## 2.   ZERO WASTE ALLIANCE IRELAND (ZWAI)

At this point we consider that it is appropriate to mention briefly the background, aims, activities, policies and strategy of ZWAI, and to list some of our previous submissions to Irish Government departments and to the European Commission.

## 2.1   Origin and Early Activities of ZWAI

Zero Waste Alliance Ireland (ZWAI), established in 1999, and registered as an Irish company limited by guarantee in 2004, is a Non-Government Environmental Organisation (eNGO) and a charity registered in Ireland.  ZWAI has prepared and submitted to the European Commission, the Irish Government and to Irish State Agencies many policy documents on waste management and waste elimination, and continues to lobby the Irish Government and the European Commission on using resources more sustainably, on promoting re-use, repair and recycling, and on development and implementation of the Circular Economy.

One of our basic guiding principles is that human societies must behave like natural ecosystems, living within the sustainable flow of energy from the sun and plants, producing no materials or objects which cannot be recycled back into the earth's systems, or reused or recycled into our technical systems, and should be guided by economic systems and practices which are in harmony with personal and ecological values.

Our principal objectives are:

i)     sharing information, ideas and contacts,

ii)    finding and recommending environmentally sustainable and practical solutions for domestic, municipal, industrial and agricultural waste management, and for more efficient and ecologically appropriate uses of natural resources such as scarce minerals, water and soil;

iii)   lobbying Government and local authorities to implement environmentally sustainable waste management practices, including clean production, elimination of toxic substances from products, re-use, repairing, recycling, segregation of discarded materials at source, and other environmentally and socially beneficial practices;

iv)   lobbying Government to follow the best international practice and EU recommendations by introducing fiscal and economic measures designed to penalise the manufacturers of products which cannot be re-used, recycled or composted at the end of their useful lives, and to financially support companies making products which can be re-used, repaired, recycled or are made from recycled materials;

v)    raising public awareness about the long-term damaging human and animal health and economic consequences of landfilling and destruction

by mass burning or incineration of potentially recyclable or re-usable materials;

vi)   investigating, raising public awareness and lobbying Irish Government departments and agencies about our country's failure to take adequate care of vulnerable and essential natural resources, including clean water and air, biodiversity, and soil;

vii)  advocating changes in domestic and EU legislation to provide for more ecologically appropriate, environmentally sustainable and efficient uses of natural resources; and,

viii) maintaining contact and exchanging information with similar NGOs and national networks in the European Union and in other countries, and with international zero waste organisations.

## 2.2   Our Basic Principles

Human communities must behave like natural ones, living comfortably within the natural flow of energy from the sun and plants, producing no wastes which cannot be recycled back into the earth's systems, and guided by new economic values which are in harmony with personal and ecological values.

In nature, the waste products of every living organism serve as raw materials to be transformed by other living creatures, or benefit the planet in other ways. Instead of organising systems that efficiently dispose of or recycle our waste, we need to design systems of production that have little or no waste to begin with.

There are no technical barriers to achieving a "*zero waste society*", only our habits, our greed as a society, and the current economic structures and policies which have led to the present multiple environmental, social and economic crises.

"*Zero Waste*" is a realistic whole-system approach to addressing the problem of society's unsustainable resource flows – it encompasses waste elimination at source through product design and producer responsibility, together with waste reduction strategies further down the supply chain, such as cleaner production, product repairing, dismantling, recycling, re-use and composting.

ZWAI strongly believes that Ireland and other Member States, and the EU as a whole, should have a policy of not sending to other countries our discarded materials for further treatment or recycling, particularly to developing countries where local populations are being exposed to dioxins and other very toxic POPs. Relying on other countries' infrastructure to achieve our "recycling" targets is not acceptable from a global ecological and societal perspective.

## 2.3    What We are Doing

Our principal objective is to ensure that government agencies, local authorities and other organisations will develop and implement environmentally sustainable resources and waste management policies, especially resource efficiency, waste reduction and elimination, the promotion of re-use, repair and recycling, and the development and implementation of the Circular Economy.

As an environmental NGO, and a not-for-profit company with charitable status since 2005, ZWAI also campaigns for the implementation of the **UN Sustainable Development Goals**, including (but not limited to) Goal 12, Responsible Consumption and Production; Goal 6, Clean Water and Sanitation (having particular regard to the need to avoid wasting water, and to wasting nutrients contained in our wastewater); and Goal 15, to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, to halt and reverse land degradation and to halt biodiversity loss.

In responding to many public consultations, members of ZWAI have made submissions and given presentations on:

- How Ireland, the European Union and the Irish food industry should address the problems of single-use plastic packaging and plastic waste (March & Nov. 2019);

- Transforming the construction industry so that it could become climate-neutral (instead of being a major emitter of greenhouse gases & toxicants);

- Observations on the general scheme of the Irish Government's Circular Economy Bill (October 2021);

- Several observations and submissions addressing the need for recovery and reuse of the phosphorus and nitrogen content of wastewater (2019 to 2023);

- Observations to the European Commission on a proposed revision of the EU Regulation on Shipments of Waste (January 2022);

- Feedback to the European Commission on a proposed Directive on Soil Health – Protecting, Sustainably Managing and Restoring EU Soils (March 2022);[19]

- Submission in response to a public consultation on the review of Ireland's security of energy supplies (October 2022);[20]

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[19] https://www.zwai.ie/resources/2022/protecting-sustainably-managing-and-restoring-eu-soils/

[20] Submission to the Department of the Environment, Climate and Communications in Response to the Public Consultation on a Review of the Security of Energy Supply of Ireland's Electricity and Natural Gas Systems; https://www.zwai.ie/resources/2022/public-consultation-on-a-review-of-the-security-of-energy-supply-of-irelands-electricity-and-natural-gas-systems/

- Submission in response to a public consultation on Ireland's Fourth National Biodiversity Action Plan (November 2022);[21]

- Submission in response to a public consultation on Ireland's National Bioeconomy Action Plan 2023-2025 (January 2023);[22]

- Submission in response to a public consultation on Ireland's draft Waste Management Plan for a Circular Economy (July 2023);[23]

- Submission in response to a public consultation on the problem of disposable vaping devices (July 2023);[24]

- Observations and recommendations on the rapidly increasing European and global problem of waste electronic & electric equipment (WEEE, Sept. 2023);[25]

- Observations to the European Commission on a Proposed EU Directive on Soil Monitoring and Resilience (November 2023);[26]

- Observations on the Irish Government's draft Green Public Procurement Strategy & Plan (November 2023);[27]

- Observations and feedback to the European Commission on the proposed revision of the EU Waste Framework Directive (November 2023);[28]

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[21] https://www.zwai.ie/resources/2022/submission-to-the-department-of-housing-local-government-and-heritage-in-response-to-the-public-consultation-on-irelands-fourth-national-biodiversity-action-plan-nbap/

[22] https://www.zwai.ie/resources/2023/zwai-submission-on-irelands-national-bioeconomy-action-plan-2023-2025/

[23] Submission to the Regional Waste Management Planning Offices on the draft Waste Management Plan for a Circular Economy; ZWAI, 05 July 2023: https://www.zwai.ie/resources/2023/submission-on-the-draft-waste-management-plan-for-a-circular-economy/

[24] Submission to the Department of the Environment, Climate and Communications in Response to the Department's Public Consultation on Disposable Vaping Devices; ZWAI, 27 July 2023: https://www.zwai.ie/resources/2023/submission-to-the-decc-on-disposable-vapes-and-why-they-should-be-banned/

[25] Submission by ZWAI to the European Commission on Waste from Electrical and Electronic Equipment — Evaluating the EU Rules; ZWAI, 22 September 2023. https://www.zwai.ie/resources/2023/waste-from-electrical-and-electronic-equipment-weee-evaluating-eu-rules/

[26] Observations and Feedback to the European Commission on the Proposed EU Directive on Soil Monitoring and Resilience; ZWAI, 03 November 2023. https://www.zwai.ie/resources/2023/submission-on-the-proposed-eu-directive-on-soil-monitoring-and-resilience/

[27] https://www.zwai.ie/resources/2023/submission-to-the-decc-on-the-draft-green-public-procurement-strategy-and-action-plan/

[28] https://www.zwai.ie/resources/2023/observations-and-feedback-to-the-european-commission-on-the-proposed-revision-of-the-eu-waste-framework/

- Observations & feedback to the European Commission on revision of Directives 2000/53/EC & 2005/64/EC on End-of-Life Vehicles (December 2023);[29]

- Submission by ZWAI to the Department of the Environment, Climate and Communications in response to the Department's public consultation on proposed amendments to the Access to Information on the Environment (AIE) Regulations 2007-2018 (January 2024);[30]

- Response to the first Public Consultation by the Department of the Environment, Climate and Communications on Ireland's draft National Energy and Climate Plan (March 2024);[31]

- Submission by ZWAI to the European Commission in response to the Commission's public consultation on the evaluation of the Nitrates Directive (91 / 676 / EEC) on Protection of Waters against Pollution caused by Nitrates from Agricultural Sources (March 2024);[32]

- Response to the second Public Consultation by the Department of the Environment, Climate and Communications on Ireland's updated draft National Energy and Climate Plan (June 2024);[33]

- Submission by ZWAI to the European Commission in response to the Commission's public consultation on proposed ecodesign and ecolabelling requirements for computers (July 2024);[34]

- Submission by ZWAI and the Waterford Environmental Forum to the Department of Transport in response to the Department's Public Consultation: "*Moving Together – A Strategic Approach to Improving the Efficiency of the Transport System in Ireland*" (August 2024);[35]

- Submission by ZWAI to the Irish Department of Housing, Local Government and Heritage in response to the Department's Public Consultation on Draft

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[29] https://www.zwai.ie/resources/2023/end-of-life-vehicles-observations-and-feedback-to-the-european-commission/

[30] https://www.zwai.ie/resources/2024/submission-to-the-decc-on-the-proposed-amendments-to-the-access-to-information-on-the-environment-aie-regulations-2007-2018/

[31] https://www.zwai.ie/resources/2024/submission-by-zwai-to-decc-on-irelands-national-energy-climate-plan-necp/

[32] https://www.zwai.ie/resources/2024/submission-by-zwai-to-the-eu-public-consultation-on-the-evaluation-of-the-nitrates-directive/

[33] https://www.zwai.ie/resources/2024/draft-update-of-irelands-national-energy-and-climateplan-necp-submission-by-zwai-to-decc/

[34] https://wwww.zwai.ie/resources/2024/ecodesign-and-ecolabelling-requirements-for-computers-zwai-submission-to-eu-commission-ecodesign-and-ecolabelling-requirements-for-computers/

[35] https://www.zwai.ie/resources/2024/moving-together-a-strategic-approach-to-improving-irelands-transport-system/

Proposed Additional Measures for Ireland's Fifth Nitrates Action Programme (December 2024);[36]

● Submission by ZWAI to the European Commission in response to the Commission's public consultation on the European Union Ocean Pact, emphasising the importance of Europe's surrounding seas and the Atlantic ocean, and their fundamental in sustaining life on our planet (February 2025);[37] and,

● Submission by ZWAI to the Department of the Environment, Climate and Communications, in response to a public consultation on Ireland's draft National Implementation Report 2025 to the Aarhus Convention Secretariat (April 2025);[38]

● Submission by Zero Waste Alliance Ireland to the Department for Infrastructure, Northern Ireland, in response to a Transboundary EIA Public Consultation on a Proposed Gold Mine Project in the Sperrin Mountains, County Tyrone (April 2025);[39] and,

● Submission by ZWAI to the European Commission on proposed draft amendments to Delegated Regulation (EU) 2019/1122 for the purpose of improving carbon accounting in the European Union Registry under Regulation (EU) 2018/841 for the Land use, Land Use Change And Forestry (LULUCF) Sector (May 2025).[40]

It will be clear that ZWAI is concerned with the very serious issues of discarded substances, materials, water and energy, whether from domestic, commercial or industrial sources, how these become "waste", and how such "waste" may be prevented by re-design along ecological principles. ZWAI is also very concerned about the effectiveness and appropriateness of Irish and EU policies, legislation, programmes and plans which are the prime determinants of how these "wastes" are managed, controlled and monitored for environmental and societal benefits.

In-depth examination and analysis of national policies have made us very aware of the many disconnections and conflicts between economic, environmental, land-use planning and social policies, frequently resulting in failure to implement necessary changes. While making the submissions listed above, we have welcomed many proposed policy changes; but at the same time we have also

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[36] https://www.zwai.ie/resources/2024/proposed-additional-measures-for-irelands-fifth-nitrates-action-programme-nap/

[37] https://www.zwai.ie/resources/2025/eu-oceans-pact-submission-by-zwai/

[38] https://www.zwai.ie/resources/2025/aarhus-convention-national-implementation-report-2025/

[39] https://www.zwai.ie/resources/2025/consultation-on-a-proposed-dalradian-gold-mine-project-in-the-sperrin-mountains-county-tyrone/

[40] https://www.zwai.ie/resources/2025/submission-on-proposed-eu-carbon-accounting-amendments-for-the-lulucf-sector/

considered that it was very necessary to evaluate all proposals in the context of what is best for the environment and society.

**ZWAI** is represented on the Irish Government's Water Forum (An Fóram Uisce), is a member of the Irish Environmental Network and the Environmental Pillar, and is funded by the **Department of the Environment, Climate and Communications** through the **Irish Environmental Network**.

ZWAI is also a not-for-profit company limited by guarantee (Company registration number **394205**), and a registered charity (CRN number **20057244**). Membership has been growing in recent years, and is currently slightly more than 50 individuals, and the company's affairs and activities are supervised by a 6-person Board of Management (Directors), some of whom are regular contributors to submissions, or make presentations at conferences.

In 2019 ZWAI became a full member of the **European Environment Bureau** (EEB); and a member of the **Waste Working Group** of the EEB. Through the EEB, we contribute to the development of European Union policy on waste and the Circular Economy.  In November 2021, the EEB established a **Task Force on the Built Environment**; ZWAI is a member of this group, and we contribute to continuing discussions on the sustainability of construction materials, buildings and on the built environment.

# 3. OUR OBSERVATIONS AND RECOMMENDATIONS IN RESPONSE TO THE EUROPEAN COMMISSION'S PROPOSAL FOR NEW POLICY INITIATIVES AND A NEW AGENDA FOR CITIES

In addition to the general observations in the introductory section 1 above, Zero Waste Alliance Ireland would like to make further and more specific observations on issues which we consider should become important, or even essential, components of an EU policy and agenda for cities.

At the same time, while this submission is focussed on cities, we are very aware that depopulation of Europe's rural regions is likely to be another major challenge facing the EU in coming years. While some dynamic rural regions are thriving due to an inflow of younger people, others are lagging behind, with a progressively smaller number of inhabitants and ageing populations.

## 3.1 Europe's Rural Regions must also be Strengthened

Despite the considerable advantages that may, potentially, be enjoyed by people living in predominantly rural regions, including (among others) more space, a better quality of life, lower housing costs and less pollution, these are outweighed in many areas by fewer job opportunities, weaker infrastructure (energy, transport, information and communications networks), poorer access to public services (such as healthcare or education) or commercial services (such as retail outlets or entertainment). When these challenges outweigh the benefits, some people – often those who are relatively young – may choose to leave rural regions in search of greater opportunities and/or prosperity. This may reduce birth rates and lower (or turn negative) the rate of natural population change in some predominantly rural areas, which results in an ageing population and fewer people of working age.

The EU's rural areas are also a core part of the European way of life. They are home to 137 million people representing almost 30% of its population and over 80% of its territory, considering all communes and municipalities of Europe with low population size or density.[41] They are widely recognised and valued for food production, management of natural resources, protection of biodiversity and natural landscapes, as well as recreation and tourism. Rural areas are also active players in the EU's green and digital transitions.

Many of our traditions, festivals and culture are rooted in Europe's rural areas. Yet social and economic changes of the last decades, including globalisation and urbanisation, are changing the role and nature of rural areas, which are also

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[41] According to the 2018 LAU (Local Administrative Unit) level modelling by the JRC Eurostat demography data. Atlas of demography: https://migration-demography-tools.jrc.ec.europa.eu/atlas-demography/

affected by population decline and ageing. Many Europeans are worried about the erosion of rural infrastructure and service provision, including access to healthcare, social services and education as well as to postal and banking services. Others express concerns about shrinking employment opportunities and a possible drop in income in rural areas, or limited transport and digital connectivity.[42]

In 2021, the European Commission launched a long-term Vision for the EU's rural areas aims to address these challenges and concerns, by building on the emerging opportunities of the EU's green and digital transitions, on the lessons learnt from the COVID 19 pandemic, and by identifying means to improve rural quality of life, to achieve balanced territorial development and to stimulate economic growth in rural areas. The **Rural Vision** builds on analysis, foresight activities, consultations and contributions from communities; it sets out the vision as well as the policy tools, to achieve it, including best practices which can be replicated; and it should help to achieve the 2030 Agenda and its Sustainable Development Goals.[43]

It is therefore our submission that, while the currently proposed initiative and new policy are primarily aimed at making cities more sustainable, and improving the well-being and lives of city-dwellers, they should include provisions to ensure that rural areas are not weakened as a result. If such provisions are not included, the magnetic attraction of city life will become stronger, and the contrast between urban and rural facilities will become greater, to the detriment of Europe's rural regions.

## 3.2   Governance of Cities, with Ireland as an Example

European cities are increasingly recognised as critical partners which should be working with national governments, administrations and agencies of the countries in which they are located, and also as partners with the EU institutions. Cities are recognized as key participants in national and multi-level governance at national and EU levels; both shaping and implementing national EU objectives. In the mandate of the European Commission, cities have seen their engagement and contribution to EU initiatives and EU funding programmes growing significantly.

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[42] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – A long-term Vision for the EU's Rural Areas - Towards stronger, connected, resilient and prosperous rural areas by 2040; Introduction, pages 1 and 2. COM(2021) 345 final. Brussels, 30.6.2021.

[43] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – A long-term Vision for the EU's Rural Areas - Towards stronger, connected, resilient and prosperous rural areas by 2040. COM(2021) 345 final. Brussels, 30.6.2021.

However, is also a matter of concern that in many EU Member States, cities generally receive more political and practical support from EU institutions than from their central governments; and, in some countries, the relationships between cities and central governments can be a matter of open conflict or avoidance, with politics playing a variable role across different countries and geographies.[44]

Compared to systems of local government in other EU Member States, the Irish system is one of the most centralised in Europe.  In addition to the elected Dáil and Seanad, Ireland has three regional assemblies, members of which are not directly elected, and whose main function is to draw up regional spatial and economic strategies.  Each regional assembly is composed of councillors from the county and city councils operating in the region.  There are no regional governments as such; and, apart from occasional public consultations, there is no public discussion of their programmes.

Public services such as policing, education, health, water services, environmental policies and programmes are controlled and administered by central government; and local authorities in cities and towns have very little fund-raising powers, but depend almost exclusively on funding from central government departments. The Civil Service executive is the dominant agency for the implementation of programmes and projects, after they have been approved in principle by the legislature (Dáil and Seanad).

According to an important EU report on public administration in Ireland, there is a low level of interaction overall between central government and regional and local government officials; and almost half of the senior officials surveyed as part of the EU survey said they never interact with local and regional government and a further quarter interact only yearly. These levels of interaction are lower than in many other European countries.[45]

The global financial crisis that hit Ireland particularly badly in 2008 and 2009 led to an increase in centralisation of power and authority in what was already a highly centralised state, with conflicts and disagreements between ministries having to be resolved at cabinet level.

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[44]  City administrations and EU affairs – How are city administrations working on and engaging with EU developments? Carlo Epifanio and Pietro Reviglio; Université de Lausanne, Eurocities, Swiss National Science Foundation; April 2024;Section 1.1, Page 8.

[45]  Boyle, R. (2014). Public Sector Reform in Ireland: Views and Experiences from Senior Executives. Dublin: Institute of Public Administration, Dublin.
http://www.ipa.ie/pdf/PublicSectorReform_View&Experience_2014.pdf
Quoted in "Public administration characteristics and performance in EU28: Ireland"; August 2017. Section 2.1.3. Capacity and power of different levels; *et seq*. European Commission Directorate-General for Employment, Social Affairs and Inclusion; Directorate F — Investment   Unit F1 — ESF and FEAD: policy and legislation. Support for developing better country knowledge on public administration and institutional capacity building" (VC/2016/0492). August 2017.

However, more recent initiatives such as restrictions on lobbying, protected disclosures (whistle blowing), freedom of information, and open government are aimed at creating a more transparent policy decision making process.

Ireland's adherence to the Aarhus Convention has assisted this process, but our recent analysis [46] of Ireland's Aarhus National Implementation Report 2025 revealed systemic shortcomings in Ireland's implementation of environmental democracy rights — Access to Information, Public Participation, and Access to Justice — as enshrined in the Convention. Access to environmental information, while apparently robust on paper, is weakened in practice by limited capacity building, poor implementation, and systemic delays. Key public bodies lack the training, resources, and cultural commitment to transparency; and a stronger legislative and administrative framework is needed to ensure that environmental data is generated, disseminated, and accessible in a timely and user-friendly manner.

Public participation is equally constrained by procedural complexity, inconsistent standards, high fees, and a lack of support mechanisms. Many decision-making processes bypass meaningful public engagement entirely, especially in key sectors such as aquaculture, forestry and certain types of agricultural developments, all of which have significant environmental implications. Access to Justice is the weakest of the three pillars of the Aarhus Convention as currently implemented in Ireland. Urgent and comprehensive reforms are needed to deliver on Ireland's Aarhus Convention commitments.[47]

Ireland ranks at or just below the European average on transparency; but in 2016, Ireland joined the Open Government Partnership and launched a national action plan which significantly improved Irish practice on transparency. Examples include the creation of Public Participation Networks to foster wider citizen participation in local government policy determination.[48]

Longer-term strategic planning remains a challenge in Ireland, despite the legal requirement for all government departments to produce three-yearly strategy statements. Some sectors, such as agriculture, appear to be better than others, while environmental protection and policy were, until quite recently, poorly served.

In Irish city councils, the mayor holds a ceremonial role, primarily acting as the public face of the council, and chairing meetings. City mayors are not responsible for the day-to-day operational decisions of the local authority, which are made by the Council as a whole or by the Council's Chief Executive and other officers. In

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[46] https://www.zwai.ie/resources/2025/aarhus-convention-national-implementation-report-2025/

[47] https://www.zwai.ie/resources/2025/aarhus-convention-national-implementation-report-2025/; section 5, pages 40-41.

[48] One of the contributors to this submission is a member of the relevant County Council Public Participation Network (PPN) and Strategic Policy Committee (SPC).

a few cases, a directly elected mayor may be assigned an executive function; for example, overseeing specific policy areas such as housing or transport, but this is rarely the situation.  In nearly all cases, the executive power is held by a non-elected City or County Manager (CEO), appointed by the Department of Housing, Local Government and Heritage.

The Department of the Environment, Climate and Communications (DECC) has a formal role in supporting the EU Cities Mission, as set out in Ireland's 2023 and 2024 Climate Action Plans.  In May 2024, the department set up a National Group to support the cities; [49] the group is made up of representatives from the cities, government departments, national agencies, regional assemblies, academia, business, and civil society.  This governance model is based on research and learning from other EU Mission cities, and the objectives of the group are:[50]

- To ensure a national focus on the Mission and that the cities are fully supported in their ambition to decarbonise by 2030;

- To serve as the forum in which cities provide updates at the national level and discuss the enablers and barriers at city level;

- To gain support for actions needed and serve as a mechanism to translate discussion into progress; and,

- To assist the cities with their Climate City Contracts and further support needs, such as funding applications, opportunities for collaborative projects.

Specific local authority matters are outside the remit of this National Group.

As stated by the Department of the Environment, Climate and Communications, cities have a fundamental role to play in addressing climate change.  Even for cities with advanced strategies, however, the goal of reaching net-zero emissions remains extremely hard to reach.  The participating cities in Ireland, managed by the three local authorities (Cork, Dublin, and Galway City Councils), face significant challenges in participating in this ambitious mission.  The fundamental purpose of the Mission approach is to remove barriers inherent to the system.  In the Irish context, work is often done in silos which must be addressed in an integrated manner across departments and agencies as climate change poses a challenge to the business-as-usual operation of government at national and local level.

For the EU Cities Mission to be successful, appropriate stakeholders must be involved and decisions made in a timely manner and at the right level of authority. A well-defined and active governance structure has been shown to result in more

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[49] https://www.gov.ie/en/department-of-the-environment-climate-and-communications/campaigns/eu-climate-neutral-and-smart-cities-mission/

[50] https://www.gov.ie/en/department-of-the-environment-climate-and-communications/publications/eu-cities-mission-national-mirror-group/

efficient and effective teams, improved results, reduced risks, and better resource utilisation.

The Irish National Group is intended to provide the three Irish cities the chance to discuss the supports they need at a national, regional, and local level to become climate neutral by 2030. This arrangement will hopefully lead to discussions on how members can collaborate and support the cities. The group will meet three times annually, along with additional bilateral meetings, to continue this approach of partnership working and multi-level governance to achieve our climate goals in Ireland's three largest cities.

In April 2022, Cork City and Dublin City were selected from over 300 applicants to participate in the EU Climate Neutral and Smart Cities Mission, while Galway City was successful in securing a €1 million grant as part of the EU Mission Pilot Cities programme.

Another initiative is that City and County Biodiversity Officers are employed by local authorities in collaboration with the Heritage Council and supported by the Department of Housing, Local Government and Heritage. The Heritage Council provides financial support to local authorities, for the cost of employing Biodiversity Officers, and also provides grant assistance annually to local authorities for projects which support the implementation of County Biodiversity Plans through a designated grant scheme.

Local Authority Biodiversity Officers work at city and county level collecting data on biodiversity, carrying out conservation projects, developing policy, providing advice and information and raising awareness.

It is our observation that despite Irish cities having been very slow to participate in a meaningful way in EU programmes individually, given the centralised nature of government in Ireland, some very positive changes are now being made. Some years ago, the Citizens Assembly showed the Government that people were extremely concerned about climate change and biodiversity loss,[51] and there is also an increasing awareness at Government level that citizens should be more fully involved in policy discussions on environmental and governance issues.

Nevertheless, it is also our observation that much more needs to be done, given that only three cities and no large towns are involved in the EU Climate Neutral Mission, and no towns have elected mayors with any significant powers. A good beginning has been made with the appointment of a biodiversity officer in each county, and many County and City Councils (Ireland's primary local authorities) have established their own Climate Action Steering Groups made up of the Council's Directors of Services and Head of Finance, and chaired by the Director

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[51] https://citizensassembly.ie/previous-assemblies/

of Environment and Climate Change.  These teams are tasked with developing appropriate climate actions in the Council, and some County Council have recently appointed Climate Action Officers.

It is our submission and recommendation that the European Commission's New Agenda for Cities should seek to include large towns, and to bring the level of climate change awareness in all cities and large towns up to that of the best cities in Europe.

The encouragement given to cities by the programmes listed in section 1.3.2.1 to 1.3.2.10 should be continued and strengthened, with the aim of bringing as many as possible of Europe's cities up the best standard for environmental sustainability, with no reduction in any of the programmes or supports for environmental issues listed in section 1.3.3 above.  In addition, we recommend that there should be significant strengthening of biodiversity awareness and capacity building to ensure that biodiversity loss is halted (section 3.3.1 below). Further observations on governance of cities in Ireland are given in section 3.3.2 below.

## 3.3   Strengthening Biodiversity in Cities

Biodiversity within European cities is a crucial topic, facing both challenges and opportunities. Many cities are actively working to enhance biodiversity through urban planning, green infrastructure, and nature-based solutions, recognizing the benefits for residents' well-being and the environment.

Challenges experienced by cities include:

- *Urban sprawl and habitat loss*: Cities are expanding, leading to the loss of natural habitats and increased fragmentation of ecosystems;

- *Pollution*: Air and water pollution, as well as noise pollution, negatively impact urban biodiversity; and,

- *Climate change*: Changing climatic conditions are affecting species distributions and habitat suitability within cities.

But there are many opportunities open to Europe's cities, and these include:

- *Green infrastructure*:  Creating and expanding green spaces, including parks, green roofs and tree-lined streets, help cities adapt to heatwaves and other climate-related hazards (trees and green spaces can cool cities by an average of 1°C, and up to 2.9°C in some cases); while urban forests can enhance biodiversity and improve urban resilience and the well-being of residents;

- ***Increasing tree coverage to 30%*** in European cities could reduce deaths associated with urban heat island effects, potentially avoiding 2,644 premature deaths annually, or about 1.8% of all summer deaths in these cities;

- ***Nature-based solutions***:  Integrating natural elements into urban design, such as permeable pavements and rain gardens, can help manage urban water flow and create habitats for wildlife;

- **Urban planning and policy**:  Cities can implement policies that prioritise biodiversity conservation and promote sustainable development practices;

- **Integrating biodiversity into transportation** (see section 3.4.9 below) and,

- ***Citizen* science *and engagement***:  Engaging citizens in biodiversity monitoring and conservation efforts can build awareness and support.

Examples of initiatives taken by Europe's cities include:

- ***BiodiverCities project***:  A European project focused on enhancing the biodiversity and green infrastructure of European cities; involved over 1,000 citizens across 10 European cities between 2020 and 2022; this project focused on co-creating urban nature visions, enhancing green spaces, and monitoring biodiversity, with varying impacts across multiple European cities;

- ***Urban Nature Plans***:  The EU Biodiversity Strategy calls for cities with over 20,000 inhabitants to develop Urban Nature Plans to create biodiverse and accessible urban green spaces;

- ***Creating green spaces***: such as parks, gardens, and nature reserves is vital for supporting diverse species; and green spaces can absorb water during floods, and vegetation helps stabilise soil to prevent erosion and landslides;

- ***Incorporating green roofs and walls*** on buildings promotes native vegetation, sustains local wildlife, and helps curb invasive species;

- **Wildlife corridors** link fragmented habitats, enabling safe migration across urban landscapes;

- ***Converting underutilised spaces*** into natural habitats and restoring degraded areas promote rewilding;

- ***Developing wetlands and rain gardens*** help manage stormwater and protect aquatic ecosystems; and,

- ***Examples of successful cities include***:   Rotterdam, Stockholm, and London have all integrated biodiversity into their urban planning strategies.

Benefits of urban biodiversity include:

- ***Improved human health***:   Access to green spaces can reduce stress, improve mental well-being, and encourage physical activity;

- ***Enhanced air and water quality***:   Trees and other green infrastructure can help clean the air and improve water quality;

- ***Climate change adaptation and mitigation***:   Green spaces can help mitigate the effects of climate change, such as urban heat island effect and flooding; and,

- ***Increased resilience***:   Biodiversity in cities can make them more resilient to various environmental stressors.

### 3.3.1  Strengthening Biodiversity Net Gain (BNG) in Urban Planning

To achieve the EU's ambitious sustainability and climate goals, the introduction of standardised Biodiversity Net Gain (BNG) legislation across Member States is essential. This legislation should mandate biodiversity as a fundamental requirement in all urban planning, development programmes and processes. Early engagement with ecologists must be promoted to improve enforcement, supported by increased expertise within planning authorities and strengthened collaboration among stakeholders.  The European Commission should provide standardised frameworks, such as BNG scoring systems and the Green Space Factor (GSF), alongside simplified guidance for developers, facilitating clearer implementation pathways.

Incentives including tax relief and grants, coupled with enforcement mechanisms like ecological bonds, can encourage compliance and ensure accountability. Crucially, promoting an understanding of biodiversity's intrinsic value beyond regulatory compliance through education and effective messaging will encourage developers, planners, and communities to actively embrace nature-based solutions. Fully incorporating biodiversity early in the planning process will remove unnecessary barriers and position ecological health as a core pillar of urban development, ultimately enhancing urban liveability and climate resilience.

### 3.3.2  Case Study: Challenges of Local Governance in Ireland

Ireland's experience highlights the pitfalls of leaving sustainability and biodiversity decisions primarily to local authorities without adequate local or devolved powers and without sufficient national coordination or support (see our earlier assessment of Ireland's governance system in section 3.2 above).  Many local

councils face capacity constraints, limited ecological expertise, and lengthy bureaucratic processes, which slow the implementation of biodiversity net gain policies and urban transport reforms.

For example, the reliance on local councils to interpret and enforce planning regulations often leads to inconsistent application of biodiversity requirements and delayed approvals for green infrastructure projects. This fragmentation hampers progress towards achieving the EU's ambitious climate and biodiversity targets at the urban level.

It is our submission that Ireland's case underlines the urgent need for the European Commission to promote standardised national frameworks which can support local authorities with clear guidance, enhanced resources, and early engagement with ecological experts. Strengthening collaboration between national governments and municipalities can overcome bottlenecks and ensure coherent, timely delivery of sustainable urban initiatives.

## 3.4    Re-imaging and Re-inventing Urban Transport and Mobility in Cities

### 3.4.1  Transforming Urban Mobility to Integrate with the Circular Economy

The European Union is at a critical crossroads in climate and urban planning policy.  Cities, where over 75% of EU citizens live, are both the problem and the solution to the EU's climate targets. Urban areas account for the vast majority of transport-related emissions, air pollution, and congestion, and are simultaneously the sites with the greatest potential for transformation.[52] Transport infrastructure and vehicle systems consume vast quantities of concrete, steel, and fossil fuels, yet public policies have historically favoured expansion over resource efficiency.

A transformative approach must embed circular economy principles into all aspects of urban transport, from design and construction to operation and decommissioning, emphasising durability, disassembly, and material reuse.[53] Member States should prioritise refurbishing aging but clearly operational tram and rail infrastructure rather than vehicle replacement or infrastructure overbuilding.[54]

It is our submission that the European Union should guide these efforts by requiring lifecycle procurement and circular design criteria as prerequisites for

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[52] European Commission. (2021). *Urban Mobility Framework*

[53]  European Commission. (2020). *Circular Economy Action Plan*

[54]  In August 2024, Zero Waste Alliance Ireland made a substantial and detailed submission to the Irish Government's Department of Transport in response to the Department's strategic plan for improving the efficiency of Ireland's transportation system: https://www.zwai.ie/resources/2024/moving-together-a-strategic-approach-to-improving-irelands-transport-system/

accessing mobility funding. By integrating resource use reduction into urban planning tools, cities can build resilient, sustainable transport networks. If transport remains tied to outdated models of car dependency, material overconsumption, and fossil fuel reliance, the EU cannot meet its climate neutrality goal by 2050.[55]

### 3.4.2 Dismantling Urban Car Dependency

The dominance of private cars in European cities results not just from personal choices but from deeply embedded spatial planning, economic incentives, and cultural norms.[56]

This dominance is particularly high in in Ireland, where 69% (on average) of the country's population travel daily by car, and in rural areas, this number is even higher at 80%, due to the lack of cost-effective, convenient and sustainable alternatives. While some people have convenient, cost-effective and sustainable alternatives available to make the shift from private car to public transport, most captive car users (who depend on their cars) do not.[57]

While electrification can lower emissions, it does not address issues such as land use inefficiency, congestion, social fragmentation, or particulate pollution caused by tyre and brake wear, problems exacerbated by the growing prevalence of heavy electric vehicles such as SUVs.[58] Therefore, urban transport strategies must focus on reducing car use itself rather than merely substituting fuel types.

This shift requires reallocating road space toward public transport and active mobility options, implementing congestion pricing, taxing high-emission and heavy vehicles (including SUVs), and setting ambitious modal shift targets. Cities like Oslo, Ghent, and Paris demonstrate that when car-reduction policies are clearly linked to tangible improvements in quality of life, public support increases, paving the way for sustainable mobility transitions.

### 3.4.3 Shared Mobility as a Measure for Reducing Transportation Impact

The growth of the sharing economy, in which goods and services are exchanged, is one of the most remarkable recent changes, with the potential to drastically change conventional passenger transportation systems. Together with

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[55] European Commission. (2019). *The European Green Deal*

[56] Mattioli, G., Anable, J., & Vrotsou, K. (2016). *Transportation Research Part A: Policy and Practice*, 89, 56–72

[57] Irish Department of Transport's strategic plan for improving the efficiency of Ireland's transportation system: "Moving Together – A Strategic Approach to the Improved Efficiency of the Transport System in Ireland", 2024: National Demand Management Strategy – Captive Car Users' Sub-Group, Introduction, page 5.

[58] Transport & Environment. (2021). *EV and SUV Impact Report*

digitalisation, which enables the efficient matching of demand and supply, this innovation could allow on-demand shared transport, especially in urban areas.

Optimised sharing has the potential to provide citizens with a more flexible, comfortable and available public transport alternative, overcoming the inconvenience of conventional public transport. This would encourage the shift of citizens to more sustainable solutions compared with the use of private cars, which are very inefficient in terms of occupancy rates and vehicle usage, both in space and time.[59]

A revealing study undertaken by the International Transport Forum examines how the optimised sharing of transport services could transform mobility in the Greater Dublin Area (GDA), while promoting public transport integration and preserving non-motorised modes of mobility. The report concludes that the current level of mobility in the Greater Dublin Area could be delivered with only 2% of the current number of private vehicles, and that a transportation system consisting only of shared mobility services and the existing rail and light-rail transit (LRT) could allow this reduction, while promoting improved equitable access for citizens, more affordable transport and increased economic productivity.

If only 20% of private car trips were to be replaced with shared modes, the number of vehicle-kilometres driven would fall by 23% and emissions would be reduced by 22%. A scenario where private cars would be replaced by shared vehicles, and the existing bus routes and rail services would be retained, would result in a 30% reduction of transport $CO_2$ emissions and 38% less congestion.

Integrating new shared services with the existing heavy rail network would be likely to increase rail ridership by up to a third (33%), but this could have the effect of creating capacity problems at rail stations, and the suburban rail service would also need increased capacity to accommodate more riders without lowering service quality. Station layouts may need to be redesigned to ensure good access for larger numbers of pedestrians and cyclists.

The cost to the user of shared mobility services would be likely to be significantly lower than the existing personal mobility options. Using shared taxis could be cheaper than owning and driving a private car for people regularly taking short and mid-distance trips of up to 25 kilometres.

The study by the International Transport Forum concluded that:

- Shared, on-demand mobility services could provide significant benefits to the Greater Dublin Area by reducing emissions, congestion and the need for parking spaces;

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[59] Shared Mobility Simulations for Dublin; Introduction, page 8. International Transport Forum, 01 Oct 2018.

- Shared mobility would also result in better transportation accessibility and opportunities for citizens, and would make access more equitable for inhabitants of areas not currently well-connected to public transport;

- The benefits of shared mobility in terms of reduced $CO_2$ emissions and congestion would be higher if a substantial portion of the area's car users shifted to the new shared modes;

- A shared mobility service could complement existing public transport;

- Properly integrating taxi-buses and shared taxis with light rail services, bus rapid transit lines and the regular bus network would greatly improve performance of the entire transport system;

- Shared mobility could act as feeder services for rail lines, and would help to increase the number rail users;

- A fleet of shared mobility vehicles operating at a regional level, with relatively long distances to cover, would need a significant increase in the number of vehicles on the roads;

- A survey showed that approximately 20% of car users would consider switching to shared mobility services, and this would be sufficient to make the services affordable; and,

- Shifting mobility from individual to shared transport modes requires a stable and predictable market for the new shared services, and this would have to be supported by aligned and integrated policies on prices, overseeing of activities, management, allocation of concessions, regulation of land-use, infrastructure design, and other issues.

It is our submission that insufficient attention has been given to the concept of shared mobility as a measure to reduce the adverse environmental impact of multiple private passenger vehicles (cars) in cities. Even if a very high proportion of private vehicles were to be electrically powered, without reducing their number, this would not reduce congestion.

Even though shared personal mobility might not be the most appropriate system for every town and city in Europe, it should be tested and demonstrated more widely in selected cities and towns, and the results made available for public discussion.

### 3.4.4  Integration and the 15-Minute City

The concept of the "15-minute city" transcends planning theory; it offers a practical, equity-driven solution to urban sprawl and transport inefficiency by ensuring that all residents can access essential services, jobs, and green spaces

within a short walk or cycle ride.[60]   To realise this vision, EU funding must prioritise localised infrastructure investments, including cycleways, protected footpaths, and community-centred public services.

Public transport hubs (see section 3.4.7 below) should evolve into multimodal mobility centres, incorporating real-time information systems, micro-mobility stations, parcel services, and universal accessibility features.  Examples from cities like Utrecht and Vienna reveal how the integration of cycling, trams, and pedestrian-friendly design improves convenience, reduces vehicle emissions, and fosters social inclusion, creating more connected and resilient urban communities.

### 3.4.5  Transforming Behaviour Through Culture and Community

Transport behaviour is shaped not only by infrastructure but also by social norms, cultural meanings, and available alternatives.  In many cities, walking and cycling remain marginalised or perceived as unsafe because of inadequate infrastructure and dominant car-centric narratives. Changing this requires innovative communication strategies that frame mobility as a shared cultural practice rather than an individual choice.[61]

We recommend EU-supported *"mobility culture labs"* within cities that bring together local communities, artists, schools, and planners to co-create behavioural nudges, storytelling, and social innovations. Initiatives such as walking buses, cargo-bike rentals, and car-free school streets generate immediate local benefits while embedding lasting cultural change. Policy frameworks should support not only physical infrastructure but also the social fabric necessary for sustainable travel behaviours.

### 3.4.6  Reinventing Public Transport with a Regenerative Model

Public transport remains the backbone of sustainable urban mobility, yet underinvestment in service frequency, lack of comfort, and poor network coverage has weakened many systems, making them unable to compete with private cars.[62] The European Commission should guarantee that all cities with populations exceeding 100,000 would receive targeted support to achieve maximum waiting times of 15 minutes on core routes.

Pilot projects in Tallinn and Luxembourg have demonstrated that free or heavily subsidised public transport increases ridership and improves accessibility for low-

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[60]  Moreno, C. (2020). *The 15-Minute City.*

[61] Shove, E., Pantzar, M., & Watson, M. (2012). *The Dynamics of Social Practice*.

[62] EUROCITIES. (2022). *Sustainable Urban Mobility Strategies*

income residents.[63]   Together with affordability, public transportation systems must enhance reliability, comfort and inclusivity by ensuring that vehicles and stations are physically accessible and well-integrated with first- and last-mile infrastructure, such as protected walkways and cycle paths.

### 3.4.7   Greening Urban Logistics and Reducing Transport Waste

The rapid expansion of e-commerce has led to increased delivery traffic and therefore greater volumes of packaging waste being generated in urban areas, posing challenges for climate goals and air quality.[64] To mitigate this, the EU should support the establishment of micro-consolidation hubs in cities, i.e., urban depots where goods are transferred from long-haul freight vehicles to electric cargo bikes or low-emission vans for last-mile delivery.

It is our submission, based on our experience of living in Ireland, where only an extremely small proportion of goods are carried by rail, that such a mandated system of freight consolidation or transfer hubs would help reduce the number of heavy freight vehicles which travel through most small towns and villages in rural areas.  In these towns and villages it is quite common to see 5-axle and 6-axle articulated vehicles delivering daily to local shops, causing traffic congestion and damage to the road surface and pavements.  These vehicles cannot easily navigate small streets, especially at sharp corners, and generally have to mount the pavement in order to get to their next destination, which in many cases is not in the town or village itself, but may be further on.

Many lengthy and heavy goods vehicles travelling through Irish towns and villages are not accessing premises in the town, or have no reason to be in the town, but are forced to travel through small settlements because of the absence of any relief roads or by-passes.  One of the reasons why these towns are congested by passing-through traffic is because the planning authorities have permitted "ribbon development" along the roads leading to and from such towns, with the result that land acquisition costs are far higher than the cost of building relief roads, with the consequence that these roads are simply not constructed. Compulsory purchase of land for the construction of relief roads is possible, but only after a lengthy public sworn enquiry, as a result of which the landowner (who may have speculated by purchasing the land many years previously) is awarded very significant compensation for loss of profit which he would have made by building on that land.

In parallel, the development of reverse logistics infrastructure is vital to facilitate the collection and reuse of packaging materials, thereby reducing single-use

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[63] Eltis. (2021). *Tallinn and Luxembourg Transit Cases*

[64] ICLEI. (2020). *Urban Freight and E-Commerce in European Cities*.

transport waste.[65] Regulations aimed at standardising packaging volume and composition, aligned with the updated Eco-Design Directive, could make sustainable urban logistics financially viable. Empowering local governments to coordinate last-mile delivery platforms among small businesses can further reduce duplication and emissions, improving urban air quality.

### 3.4.8 Biofuels and Transitional Solutions in Urban Transport

While electrification remains the ultimate goal for urban fleets, biofuels derived from urban waste streams, such as used cooking oils and food scraps, offer viable transitional decarbonisation pathways for municipal vehicles that cannot yet be electrified.[66] It is essential that these biofuels are locally sourced to ensure traceability, circularity, and to avoid reliance on crop-based fuels that compete with land areas and which threaten food security and biodiversity.[67]

Cities should be supported in piloting biofuel hubs for service fleets such as waste disposal trucks and construction vehicles, complemented by partnerships with restaurants and residential estates to collect bio-waste. This approach closes urban metabolic loops, reduces fossil fuel dependence, and fosters circular urban energy systems.

### 3.4.9 Building Biodiversity and Climate Resilience into Transport Infrastructure

Transport infrastructure and ecological health must no longer be treated as separate domains. All new roads, tram corridors, and public spaces should be designed and built with integrated green infrastructure, including tree canopies, bioswales, pollinator corridors, and permeable surfaces, to enhance biodiversity and climate adaptation.[68]

It is our submission that the EU should require biodiversity and climate resilience impact assessments for all major EU-funded urban mobility projects. Integrating nature-based solutions into transport infrastructure improves air quality, regulates urban temperatures, boosts liveability, and fosters social cohesion. Investment in these green solutions should be scaled across Member States, making them a standard prerequisite in infrastructure design and planning.

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[65] Ellen MacArthur Foundation. (2019). *The Circular Economy in Cities*.

[66] European Commission. (2022). *Sustainable Biofuels under Fit for 55*

[67] Transport & Environment. (2021). *Food vs Fuel Criteria Briefing*

[68] European Environment Agency. (2022). *Green Infrastructure in Transport Projects*.

## 3.5    Cities, Water and Wastewater

### 3.5.1   Historical and Cultural Background

Water, says Ivan Illich,[69] is not just the $H_2O$ produced by burning gases, nor is it the liquid that is metered and distributed by public authorities – it is "*the fluid that drenches the inner and outer spaces of the imagination*".  What we do with water reflects the fashion of each age.  In our present time we have transformed water from a spiritual substance that was traditionally used to baptize the newborn and purify the dead and the living, into a scarce resource in need of technological management, a kind of cleaning fluid that has lost the ability to excite our imagination, especially in the cities and urban spaces where most of us live.

In Europe, the European Commission has long recognised the threats to water quality, and the growing problem of water scarcity and drought on the one hand, and flood risk management on the other.  In January 2007, the European Commission's Directorate-General for Environment organised the first meeting of the Stakeholder Forum on water scarcity and droughts, at which it was agreed that water demand management must be improved, and more emphasis placed on water saving.

We need to ask what our cities are doing with water – from where do we obtain it, how are the natural reservoirs of water maintained and safeguarded, what happens when we use water, and how we, as a society and as individuals, choose to deal with liquid wastes, i.e., human excreta, wash waters and the products of our domestic and social cleansing activities.

### 3.5.2   Turning Fertiliser Into Waste – A Costly Exercise

For most of humanity's existence on this planet, our excreta and food wastes served as nourishment for other animals, or were returned directly to the soil in rural areas.  The cycle was closed, though imperfectly, and the nutrients which we removed in the form of cereals, vegetable crops and cattle were put back as biodegradable organic wastes.

In Europe's cities, most homes had no designated space for bodily relief, and the street was assumed to be the proper place for the disposal of all domestic wastes. Medieval cities were cleaned by pigs; while ravens, kites and vultures were protected as sacred scavengers.  By the mid 19th century in London, the houses of the wealthy usually contained one "*privy*", from which "*nightsoil"* was removed several times each week for spreading on land.

The invention of the water flush changed this practice.  The water closet (or WC) was first used by the English upper classes in the late eighteenth century; it was placed in a closed cupboard and drained by an unventilated pipe to a cesspool in

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[69]  Illich, Ivan.  $H_2O$ and the Waters of Forgetfulness, Equinox Publishing, 1986.

the cellar.  The device became common in London, partly because of the social status it conferred on its owner.  By law, the contents had to be retained in cesspools on the premises (which produced a more evil-smelling gas than the "privvies" they had replaced !); but, in spite of the law, an increasing number became connected to the sewers.

Towards the end of the 19th century, when piped water and the WC became common in both Britain and the United States, the capacity of domestic cess-pools became quickly overwhelmed, the surrounding soil could no longer absorb the water, and major health problems resulted.  Personal hygiene had progressed at the expense of public health, and the technology of sewerage systems and large-scale sewage treatment had to be developed.

The cost of getting rid of water from the household proved to be many times more costly than getting it there in the first place.  This disproportion was increased further when many European and American cities decided to combine the sewers for domestic wastewater with storm sewers for rainwater.  The engineers also relied on the ability of natural bodies of water to dilute, disperse and breakdown the wastes from sewers and treatment plants.  By the end of the 19th century, the spread of faecal-borne infection via tap-water became common, and the circulation of water became an agent in the spread of disease.

Resources had to be applied either to the further treatment of sewage before disposal, or to the treatment of water supplies for domestic use.  For the first half of this century, public authorities chose to sterilise water supplies, using filters and chemical treatment (mainly by chlorine).  In recent decades, the emphasis has been shifted towards more complete treatment of sewage (for example, tertiary treatment and "polishing") in order to prevent increasing pollution.  At the same time there is a growing awareness that chlorination can cause (as well as cure) serious health problems.

It is relevant to note that the spread of the WC was resisted at first, even in cities where its need might be considered greatest.  For example it took over a century for Paris to follow the example of London.  A report from L'Institut de France in 1835 rejected a proposal to adopt the WC and to channel the sewage into the River Seine.  The decision was based neither on anti-British sentiment nor on concern for the water quality in the river, but on calculating the enormous economic value that would be washed down the drain with the excrement of people and horses.

During the middle of the 19th century, a sixth of the area of Paris produced 50 Kg per capita of fresh salads, fruit and vegetables, more than the 1980 level of per capita consumption.  Approximately 6.5 persons per hectare were employed full time, with others engaged in sales; and over a period of four decades enough "soil" was produced to enable the growing area to be expanded by 6 % annually.

The growing techniques reached maximum sophistication in the 1880s, with inter-cropping and succession-cropping giving as many as six, and never less than three, harvests per year.  Winter crops were made possible by the heat of fermenting manure, bell-shaped glass cloches, straw mats and high walls surrounding the inner-city small-holdings.  Kropotkin's claim, made in 1899, that the city of Paris could supply London with green vegetables, was not unreasonable.[70]  It may be surprising to learn that a proposal was made some one hundred years ago to export by rail from Paris the excess of rich humic soil so as to fertilise the surrounding countryside.  The efficiency of the re-cycling system was all the more remarkable by today's standards when the almost total absence of imported energy (in the form of fossil fuels and fertilisers) is taken into account.

Unfortunately, instead of exporting soil to fertilise the countryside, present-day cities export wastewater and the flush-toilet !  Between 25 % and 50 % of all domestic water goes down the toilet, consuming expensively treated water where its biological cleanliness is irrelevant, and putting further demands on scarce resources.

In a global context, the increasing use of the flush toilet is creating very severe problems.  An early paper entitled "*What is Environmental Sustainability in Sanitation?",* by Robert Goodland and Abby Rockefeller in the Summer 1996 issue of the UNEP International Environmental Technology Centre Newsletter, states that "*for the sake of environmental sustainability, we must stop mixing human excreta with drinking water, then collecting and further worsening this mixture with industrial and non-point source wastes".*[71]

Goodland and Rockefeller based their arguments not only on the waste of resources, but on the economic costs of collecting, treating and disposal of sewage.  Data from cities in OECD countries show that initial construction costs alone are around $50,000 per household.  Overall, some 80-90% of the construction costs of a sewage treatment and disposal system are taken up by transportation of the waste-water (e.g., laying of pipes) and around 10-20% by the treatment process.  Even if these costs are less in those countries which we call "third world" or "developing states", they are prohibitive for poor nations saddled with large amounts of Western-inspired debt.

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[70]  Stanhill, G., 1977.  An urban agro-ecosystem: the example of nineteenth-century Paris.  Ecosystems, Vol 3, pp 269-284.

[71]  Goodland, Robert, and Rockefeller, Abby, 1996.  What is Environmental Sustainability in Sanitation.  *Insight*, Newsletter of the UNEP International Environmental Technology Centre, Summer 1996, pp 5-8

In European cities, water distribution is the most expensive public infrastructure, especially in older cities where water infrastructure is ageing and deteriorating, making leakage management one of the biggest challenges.[72]

Therefore, as a consequence of the widespread use of the relatively simple technology of the flush toilet and the "water carriage" system, along with the application of other technologies upstream and downstream to mitigate its effects, we now require:

i) larger-scale and more expensive water treatment and distribution systems to supply larger quantities of potable water than would otherwise be necessary;

ii) expensive and complex sewage collection and treatment facilities serving most towns and all major cities;

iii) a means of disposing of the sludge remaining after treatment of the sewage;

iv) individual on-site treatment of sewage from houses and other buildings outside towns and cities;

v) expensive water treatment facilities to safeguard public health; yet producing, at best, a tasteless water suspected of carrying minute quantities of contaminants; and,

vi) large-scale production and application of chemical fertilisers to restore nutrients to agricultural land.

These technological or engineering solutions, while solving some problems, have created others, resulting in:

a) surface water and groundwater pollution by faecal bacteria and sewage-derived nutrients;

b) soil depletion and erosion in cereal growing areas as a result of intensive fertiliser use and continuing artificially heavy crop yields per hectare;

c) public controversy over the siting of enlarged or new sewage treatment works;

d) rising costs of maintaining the water cycle; and,

e) a changing attitude towards water that regards it more as a useful cleaning fluid than as a unique and essential basis for life on this planet.

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[72] The Future of Cities – Opportunities, Challenges and the Way Forward; section 10.2, page 74.  European Commission Joint Research Centre, 2019.  Luxembourg: Publications Office of the European Union, 2019.

### 3.5.3 Alternatives

Obviously, there are few (if any) advantages in returning to the way in which cities dealt with their wastes from medieval times through to the 19th century. Yet to the present day in many parts of the Asian, African and Indian continents, rural dwellers continue to deal with their domestic wastes by disposal to soil -- with varying degrees of healthiness or unhealthiness, depending on their knowledge and practices.

Twentieth-century microbiology and our knowledge of parasites and the transmission of diseases allows us to by-pass or avoid all of the sewage-derived problems which made life uncomfortable, unhealthy or difficult for people living in earlier times, while at the same time ensuring that nutrients and organic matter are returned to the soil. The application of ecological principles, waste minimisation at source, modern knowledge of disease transmission, new construction materials and modern technology has opened up a range of domestic wastewater disposal alternatives particularly applicable to rural areas. It remains to be seen whether we are willing to adapt culturally and in our habits to using such alternatives.

Improvements to existing water supply, sewage disposal systems and alternative methods of disposal may be grouped into the following principal types:

i)   improved percolation area design and location for proprietary wastewater treatment systems in some urban and rural areas, and the more common use of constructed wetlands where ground conditions permit;

ii)   small-scale packaged sewage treatment plants, to serve the needs of towns and villages;

iii)   water-saving devices and appliances in homes;

iv)   non-water-carriage toilets which do not require flushing;

v)   toilets which separate urine from faeces, which allow the separated urine to be more easily managed, and an essential element, phosphorus, recovered from it, for use as a necessary fertiliser;

vi)   domestic wastewater re-cycle and re-use systems, based on re-using grey water (water from baths, showers and wash-hand-basins) which can be used where water of a lower quality is needed, for example for toilet flushing, dust suppression, yard cleaning, etc.;

vii)   harvesting or recovering rainwater from roofs and clean paved surfaces, for use where water of a lower quality is needed; or the collected rainwater can be easily purified, to serve as an acceptable source of potable water;

viii)   using swales or sustainable urban drainage systems, to collect and store storm water, so that it can be released more slowly into the groundwater, enabling recharge of aquifers;

ix)   water metering and volume-related charges; and,

x)   avoiding the spreading of slurry and fertiliser near watercourses(lakes, rivers, streams) or on land which is saturated, or in areas where the soil cover over karstified limestone or other aquifers is thin.

### 3.5.4   The Connections between Cities and Water

Cities and water management are intrinsically linked, and Europe's cities are facing challenges of water scarcity, pollution, and increasing urban populations. Sustainable water management is crucial for ensuring a reliable water supply, protecting public health, and mitigating the impacts of climate change in urban areas.

Challenges related to water and faced by cities include:

- *Water Scarcity*:   Growing populations and changing consumption patterns are putting a strain on water resources, particularly in urban areas;

- *Water Leakages and Losses* in cities' water distribution systems: for instance, the Finnish city of Helsinki loses some 41% of its drinking water to leakages, Dublin (EI) 38%, Ljubljana (SI) 35% and Łódź (PL) only 5%;

- *Water Pollution*: Industrial discharges, residential wastewater, and urban runoff can contaminate water sources, posing risks to human health and the environment;

- *Climate Change:*   Rising sea levels, more frequent and intense heat waves, and changes in precipitation patterns are exacerbating water-related challenges in cities;

- *Increased uncertainty* over water availability, impacted by extreme weather events, and by the changing demography; and,

- **Inequitable Access to water**:  Many people in informal settlements lack access to basic water and sanitation services, while others may have to rely on private vendors with questionable quality and affordability.

Possible further solutions to water-related problems (in addition to the solutions proposed in section 3.5.3 above) include:

- **Efficient *Water Use***:   Implementing water-wise practices, such as reducing water consumption, using grey water for non-potable purposes, and promoting water-efficient technologies, can help conserve water resources;

- **Water *Reuse and Recycling***:   Treating wastewater and reusing it for other non-potable purposes, such as irrigation and industrial processes, can significantly reduce the demand on fresh water;

- ***Infrastructure Development***:  Investing in reliable and efficient water distribution and wastewater treatment infrastructure is essential for ensuring a safe and sustainable water supply;

- ***Climate Change Adaptation***:  Implementing measures to manage flood risk, reduce the impacts of heat waves, and improve resilience to changing precipitation patterns is crucial for adapting to a changing climate; and,

- ***Integrated* Water Management**:  Coordinating water management efforts with other urban management functions, such as land use planning, transportation, and waste management, can improve the efficiency and effectiveness of water resource management.

Some cities, especially in southern Europe, may be described as **Water-Sensitive Cities**, and these cities need to integrate water management into all aspects of urban planning and development, promoting sustainable and resilient water systems.  Water-sensitive cities need to prioritise water security, environmental protection, and social equity, while also promoting innovation and economic development.

Many water sensitive cities are implementing these practical approaches and solutions, including giving a high priority to green infrastructure, rainwater harvesting, and smart water management systems.

Raising public awareness of the importance of water is also an essential tool to ensure that cities use water sustainably, as much as possible.  For example, the **Global Network of Water Museums** aims to re-connect people with water and to all forms of water heritage (both natural and cultural heritages). It was established to promote water awareness education and foster holistic and inter-disciplinary approaches aimed at valuing any kind of water assets and legacies for their natural, social, cultural, artistic, and spiritual dimensions.[73]

Water awareness centres, or "*water museums*", listed in our presentation to the All-Ireland Water & Wastewater Expo and Conference, Dublin, 23 November 2022, include the water-pumping plant '*Travata*', Mantua, Italy, built 1925-29; the Aquapic Water Museum, Timisoara, Romania, and "Agbar – Museu de les Aigues", Barcelona, Spain.

In Ireland, local initiatives urging people to take care of rivers, streams and lakes are promoted by the **Local Authority Waters Programme** (LAWPRO), which works on behalf of Ireland's 31 local authorities to protect and restore good water quality in rivers, lakes, estuaries, ground and coastal water through catchment science and local community engagement.

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[73] https://www.watermuseums.net/ Quoted in https://www.zwai.ie/resources/2022/all-ireland-water-wastewater-expo-water-and-sustainability/

Funded by the Department of Housing, Local Government and Heritage, LAWPRO coordinates efforts to achieve good or high water quality in our rivers, lakes, transitional and coastal waters, and groundwater, as required by the European Union Water Framework Directive.[74]

Even in cities, healthy rivers and catchments support a healthy environment, a robust economy, together with peoples' health, and wellbeing; and it is our submission that the Commission's proposed New Agenda for cities should include specific policies for the protection of rivers and streams running through Europe's cities and towns – these should not be canalised or made to flow through underground pipes (culverted), but opened up and enhanced for amenity and biodiversity.  Some European cities have made excellent use of their rivers for these purposes, while other cities have polluted these urban watercourses, and then sought to hide them from public view.

### 3.5.5  Infrastructure for Water Conservation and Control

The impact of extreme rainfall events is increasing with climate change and this is significantly increasing both the level of pollution from urban runoff and the increased flood risk from the larger volume of storm water run-off from mainly impermeable urban areas.  The main pollution sources are:

- Atmospheric deposition which facilitates transfer of polluting substances and materials in the atmosphere to the urban catchment surface;

- Urban vehicles which deposit tyre fragments as well as hydrocarbon leakages; and,

- Urban waste such as pet faeces, litter, microplastics, salt from road treatment, etc.

This toxic cocktail of pollutants has been noted by the Environmental Protection Agency (EPA) as one of the primary sources of pollution from urban areas, along with discharges from urban wastewater systems.

Furthermore, in urban areas, where natural infiltration is reduced, rainfall runoff can be 400% greater in volume than in rural areas, resulting in urban areas being affected by extreme surface water flows in a severe rainfall event.  Across Ireland as a whole, flood magnitudes have been increasing at a rate of about 5% per decade since the 1960s.

Traditional engineering solutions to rainwater management using piped underground networks are not easily adapted to a changing rainfall pattern as their capacity and location are both fixed.  In contrast, nature-based solutions (NBS) at surface level are visible and any excess runoff that cannot be absorbed

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[74] https://lawaters.ie/

or dealt with by the NBS is clearly visible and will run overland to the next area of NBS and, ultimately, into rainwater retention areas with some further excess dealt with by residual piped networks.  Nature-based solutions are therefore adaptive, and will provide "climate resilience", as they will retain, store and treat flood-water and storm-water before it is allowed to discharge.

The planning and design of nature-based solutions in urban areas should aim to maximise biodiversity and amenity benefits, manage flood risk and water quality as well as conserve or recycle water.  NBS include a variety of initiatives such as green building surfaces, green roofs, raingardens, swales, permeable surfaces, bioswales, natural water collection and storage ponds; and these can be complemented by the creation of green spaces and the extensive planting of trees within the public and private realms.  A water-sensitive innovative urban design approach is needed to achieve this, and it should be possible to achieve this while also enhancing place making, the use of sustainable transport and the "self-regulated streets" concept.

It is our submission that the proposed New Agenda for Cities should specifically encourage nature-based solutions for storm-water and rainfall management; there is a wealth of practical information on how to design and maintain such systems, and they should be retrofitted where possible into existing cities and towns, and designed into new towns and city suburbs' plans.

## 3.6   Reducing the Environmental Footprint of Cities

Most resources used in urban environments come from outside city borders, and the consumption of these natural resources puts significant pressure on the environment and can lead to negative impacts such as water stress, terrestrial and aquatic eutrophication, biodiversity loss and climate change.

The environmental footprint quantifies this pressure in terms of cities' use of a scarce resource or the pollution they generate.[75]  To date, actions aiming to increase urban sustainability have mainly looked at the direct effects on the urban environment.

For example, the Green City Index[76] rates municipal water use rather than the overall urban water footprint.  Most urban citizens now live away from agricultural systems and industrial production zones and are unaware of the environmental pressures and impacts of the products they consume. As product supply chains

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[75]  Vanham D., Bouraoui F., Grizzetti B., Bidoglio G. 2015. Lost water and nitrogen resources due to EU consumer food waste; Environmental Research Letters, 10, 084008: https://doi.org/10.1088/1748-9326/10/8/084008.

[76]  Siemens, Economist Intelligence Unit, 2012. The Green City Index - A Summary of the Green City Index Research Series, Munich. https://www.siemens.com/entry/cc/features/greencityindex_international/all/en/pdf/gci_report _summary.pdf

have become increasingly complex due to international trade, their footprint has often expanded into distant world regions, becoming further away from the cities' immediate hinterland.[77]

The interactions and trade-offs between water-energy-food and the ecosystem (the WEFE Nexus) are increasingly being acknowledged by different institutions – including the European Commission and the UN [78] – as important for policymaking. Water, for example, is interlinked with and affects all aspects of city life: agriculture, industry, energy production and, of course, the environment. Water also has a cultural perspective, and is increasingly becoming a political argument.

### 3.6.1  Cities' Food Systems Have a Major Impact

The environmental impacts associated with the production of food exceed that of all other sectors, accounting for 29% of global human-induced GHG emissions, with food waste leading to the emission of 170 million tonnes of $CO_2$. In industrialised countries, more than 40% of food losses and waste occur at retail and consumer levels

Cities have a strategic role to play in developing sustainable food systems and promoting healthy diets. According to the FAO, sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy, while optimising natural and human resources.

One successful approach to addressing this problem was taken by the Mayor of Milan in 2014, when he decided to launch an international protocol aimed at tackling food-related issues at the urban level, to be adopted by as many world cities as possible. The Milan Urban Food Policy Pact was signed on the 15 October 2015 in Milan by more than 100 cities.[79]

This Pact is an international agreement of Mayors of Europe's cities, but it is more than a declaration, it is a concrete working tool for cities. It is composed by a preamble and a Framework for Action listing 37 recommended actions, clustered in six categories. For each recommended action there are specific indicators to monitor progresses in implementing the Pact. The Milan Pact Awards offer

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[77]  The Future of Cities – Opportunities, Challenges and the Way Forward. European Commission Joint Research Centre, 2019. Luxembourg: Publications Office of the European Union, 2019.

[78]  Food and Agriculture Organization of the United Nations (FAO) 2019. Water-Energy-Food-Nexus: http://www.fao.org/energy/water-food-energy-nexus/en.

[79]  https://www.milanurbanfoodpolicypact.org/the-milan-pact/

concrete examples of the food policies that cities are implementing in each of the six Pact categories.[80]

Reducing food waste is a key concern of Zero Waste Alliance Ireland, and we have proposed various solutions in previous submissions.[81]

The production of fresh and nutritious food locally in densely populated urban areas can significantly reduce food waste and emissions from distribution, improve overall urban food security, environmental and health conditions, and promote inclusive social interaction.  New emerging technologies include rooftop greenhouses, aquaponics and indoor vertical farms.   Urban agriculture is becoming increasingly mainstream, both commercially and by citizens individually or collectively, mobilising whole communities into producing food in their own neighbourhoods.

It is therefore our submission that the proposed EU Initiative and New Agenda for Cities should strongly promote local food production in cities or very close to cities (to minimise transportation), encourage city administrations to provide low cost central spaces for local food producers' markets; encourage and support "city farms", require minimisation of food waste, and the conversion of discarded food to other uses.

### 3.6.2  Utilising Solar Energy

Given the success of solar energy as a renewable energy source, it should be clear that every effort should be made to incorporate solar panels in city planning, and on every available surface, large and small.

Solar energy already plays an important role in Europe's urban areas, helping cities reduce emissions, enhancing energy security, and displacing traditional fossil fuel power station.   Cities across the continent are using increasing amounts of solar power through various initiatives, including rooftop installations, community projects, and urban farms.

These efforts contribute to a more sustainable and resilient energy future for European cities, but increased use of solar power also needs strengthening of national grids in Member States, and considerable improvement of electricity

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[80]  The Future of Cities – Opportunities, Challenges and the Way Forward.  European Commission Joint Research Centre, 2019.  Luxembourg: Publications Office of the European Union, 2019.

[65]  See, for example: https://www.zwai.ie/resources/2025/irelands-food-system-is-it-wasteful/ https://www.zwai.ie/resources/2024/food-waste-problems-solutions/ https://www.zwai.ie/resources/2022/feedback-to-the-european-commission-on-food-waste-reduction-targets/  and: https://www.zwai.ie/resources/2022/feedback-to-the-european-commission-on-a-proposed-directive-on-soil-health-protecting-sustainably-managing-and-restoring-eu-soils/

distribution networks in countries which had been reliant on large-scale and centralised power plants.

The benefits of increased solar energy utilisation in European Cities include:

- *Reduced Carbon Emissions*:  Solar energy helps cities transition away from fossil fuels, significantly reducing greenhouse gas emissions and improving air quality;

- *Enhanced Energy Security*:  Local solar generation reduces reliance on centralized grids and volatile energy prices, making cities more resilient to disruptions and ensuring stable energy access;

- *Economic Benefits*:  Solar energy can lead to lower energy costs, create local jobs, and stimulate economic activity; and,

- *Increased Food Security*: Solar-powered urban farms enhance food production locally, reducing reliance on imports and improving food supply stability.

Initiatives and examples include mandatory solar installations on new buildings and building renovations required by several European countries, including Baden-Württemberg (Germany). Local food production in urban areas is becoming increasingly solar-powered, and many cities (for example, Munich, Barcelona, and Copenhagen) are encouraging community-owned solar projects, allowing citizens to invest in and benefit from local solar installations.

However, there is a need for clear and consistent regulatory frameworks to support solar development across Europe, while engaging citizens in solar projects and promoting the benefits of renewable energy is also important. Continued innovation in solar technology is driving efficiency and affordability, and glance back over the last few decades will show how solar PV has fallen in price and gained in efficiency.

At a local level, a successful example from Ireland is that Galway City has recently installed solar powered smart benches with battery back-up as a trial initiative in three locations.  These benches provide wired and wireless charging for devices with USB charging or capable of wireless charging, along with free Wi-Fi. They were designed by Galway City Council and are manufactured in County Louth, and each bench contains an educational slogan along with Galway City Council logo.

It is our submission that the proposed EU Initiative and New Agenda for Cities should strongly promote solar energy, including exchange of energy between consumers and producers, regulatory approval for micro-grids linking districts to each other, peer-to-peer trading across the microgrid, trading between all

consumers, not just large industrial consumers, enabling a fair price for energy for all consumers in a community, and developing more flexible energy systems.

This recommendation is already being achieved by REScoop.eu, which is the European federation of energy communities, a growing network of 2,500 energy communities from across Europe and their 2 million citizens who are active in the energy transition.[82]   It is our further submission that this type of network of communities could be appropriate for some of Europe's large cities, so that a significant proportion of the energy needed by the city can be produced within the city, or on the margins of the city, at certain times.

## 3.7  Make Greater Use of Sustainable and Cost-Effective Building Materials

The construction industry in its present form is an activity which is highly material and energy intensive, causing significant damage to the environment.  Embodied carbon – the carbon dioxide emissions created in the construction process before a building becomes operational – accounts for 10% of all global energy-related $CO_2$ emissions. An even greater cause for concern, is that the production of widely used concrete is extremely energy-intensive, accounting for 8% of global $CO_2$ emissions.

If cities are to become environmental sustainable and to minimise their impact on the environment, it is necessary to consider new, sustainable alternatives to reduce the carbon footprint of building projects.  There is a wide variety of such materials, some very traditional, while others are the subject of a considerable amount of research and an increasing interest in their use.

Examples include:

- Hemp, utilised as hempcrete;
- Structural mass timber, including bamboo;
- Rammed earth, clay blocks and cob;
- Straw bale;
- Recycled plastic and vehicle tyres;
- Recycled steel;
- Recycled glass;
- Plant-based polyurethane rigid foam; and,
- Ferrock.

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[82] https://www.rescoop.eu/

In this submission we will focus on hemp as a suitable renewable and sustainable construction material because of its many advantages.

### 3.7.1 Hemp as a Circular, Carbon-Negative Solution for Urban Sustainability

Alongside the transport reforms described earlier in this submission, industrial hemp presents a promising circular and carbon-negative material solution for many urban challenges related to waste and emissions. As a fast-growing, regenerative crop, hemp can replace high-waste, non-biodegradable materials in key sectors such as construction, textiles, and packaging.

Hempcrete and hemp insulation provide durable alternatives to concrete and synthetic insulation, offering carbon sequestration benefits while improving indoor air quality and energy efficiency.  These materials are naturally mould-resistant, biodegradable, and contribute to zero construction waste, making them an ideal component of sustainable building strategies.

In textiles, furniture, and bioplastics, hemp offers sustainable replacements for petroleum-based products, significantly reducing landfill waste, microplastic pollution, and overall carbon footprints.

If supported by appropriate policies, industrial hemp can replace non-recyclable and short-life-span products made of plastic, synthetic textiles, and chemically treated materials.

### 3.7.2 Policy Recommendations for Integrating Hemp into the Circular Economy

The EU should explicitly include hemp in the proposed EU Initiative and New Agenda for Cities, in the Circular Economy Action Plan, in the Waste Framework Directive, and in the EU Bioeconomy Strategy by setting waste prevention targets that encourage the use of renewable and biodegradable materials. Strategic investments in research, processing infrastructure, and pilot projects, such as those under the New European Bauhaus initiative, will be critical to accelerating industrial uptake.

Supporting hemp through grants, tax incentives, and streamlined regulatory frameworks will further stimulate market growth. Standardising hemp products and recognising their carbon sequestration potential in environmental product declarations and green public procurement criteria are essential for building confidence and demand across Member States.

It is our submission that waste prevention targets which promote renewable, biodegradable materials such as hemp, should be introduced in line with the EU Waste Hierarchy and Green Deal's zero pollution ambition.

Our further recommendations include:

- Support R&D on hemp-based materials and technologies under Horizon Europe and related innovation funds;

- Invest in local and regional hemp processing infrastructure, reinforcing rural development and resilience within the EU Cohesion Policy framework;

- Facilitate pilot projects through the New European Bauhaus initiative, demonstrating hemp's role in sustainable building;

- Provide grants and tax incentives for industrial-scale adoption of hemp in any sectors;

- Encourage public procurement of hemp-based products across EU institutions, national agencies, and municipalities, setting an example for sustainable consumption;

- Update and harmonise EU standards and ecolabels to include hemp-based construction materials, textiles, and biodegradable composites; and,

- Recognise hemp's carbon sequestration and low-impact lifecycle in Environmental Product Declarations and Green Public Procurement criteria.

Our reasons why hemp should be integrated into the circular economy (especially for buildings and construction) are derived from the advantages and benefits of using hemp, listed in section 3.7.3 below.

### 3.7.3 How Hemp Can Help Prevent Waste and Reduce $CO_2$ Emissions

#### *3.7.3.1 Waste Reduction*

Hemp-based products are durable, biodegradable, and recyclable, significantly extending product lifespans and reducing waste generation. If supported by policy, industrial hemp can help replace non-recyclable and short-life-span products made of plastic, synthetic textiles, and chemically treated materials. The areas of implementation of hemp will be described with the main focus on the construction area.

#### *3.7.3.2 $CO_2$ Sequestration*

Hemp absorbs 8 –15 tonnes of $CO_2$ per hectare — more than most commercial crops. Scaling hemp cultivation would contribute directly to the EU's carbon neutrality goals, especially when used in long-life products like construction materials and durable goods.  Hemp can provide these benefits in the following areas:

**(i)    Construction**

Hempcrete and hemp insulation are durable, carbon-negative alternatives to concrete and synthetic materials. Hempcrete can absorb up to 165 kg of $CO_2$ per cubic metre during production and continues to passively sequester indoor $CO_2$ over time. Its biodegradability and on-site casting reduce construction waste to near zero, while its low thermal conductivity cuts heating and cooling demand. Hempcrete is also chemical-free, non-toxic, and naturally resistant to mould and pests, making it a healthier choice for both construction workers and building occupants. Unlike cement—which contributes to 8% of global $CO_2$ emissions — hempcrete offers a safe, net-positive climate solution for sustainable construction.

**(ii)    Textiles**

Hemp is a sustainable alternative to synthetic fibres in clothing, shoes, and everyday textiles. Unlike petroleum-based materials, hemp fabrics are biodegradable, naturally antibacterial, and non-toxic, making them ideal for sensitive skin. It requires less water, land, and no pesticides compared to cotton, and even improves soil health. Hemp textiles are durable, breathable, and UV-resistant, offering superior performance with a lower environmental impact. Replacing synthetic fibres with hemp can significantly cut landfill waste, microplastic pollution, and the fashion industry's carbon footprint**.**

**(iii)    Bulky Waste Items**

Furniture, mattresses, and floor coverings made with hemp-based composites and natural fibres are more sustainable and recyclable than their synthetic counterparts, helping reduce the volume of bulky waste sent to landfills.

**(iv)    Paper**

Hemp yields more pulp per acre than trees and requires no harsh chemicals for processing. It can be used to produce books, packaging, and office paper — offering a renewable alternative that reduces deforestation and paper waste.

**(v)    Plastic Alternatives**

Hemp-based bioplastics are biodegradable and can replace petroleum-based single-use plastics in packaging, containers, and utensils—helping to tackle plastic pollution at the source.

**(vi) Automotive Industry**

Hemp fibres are increasingly used in car interiors, insulation panels, and composite materials. They offer strength, durability, and lightweight properties, making vehicles more fuel-efficient while reducing the use of fossil-fuel-based plastics.

**(vi) Cosmetics and Personal Care**

Hemp oil and hemp-derived ingredients are used in skincare, haircare, and body products. They are natural, biodegradable alternatives to synthetic additives and microplastics, offering both environmental benefits and enhanced skin compatibility, feminine hygiene products, and nappies many of which contribute heavily to landfill waste and microplastic pollution.

**(vi) Energy Storage – Hemp Batteries**

Hemp fibres can be converted into graphene-like nanosheets used in supercapacitors, offering a low-cost, sustainable alternative to lithium-ion and graphene-based batteries. Hemp batteries are cheaper to produce, faster to charge, and environmentally safer, with no reliance on rare-earth metals or toxic mining. As supercapacitors, they provide high energy density and long cycle life, making them a promising green solution for future energy storage.

Hemp's potential extends to the energy sector, where its fibres and biomass are being explored for use in energy storage technologies. Hemp-based batteries, for instance, are being developed as a sustainable alternative to lithium-ion batteries. These batteries leverage hemp-derived graphene to create supercapacitors, which are not only environmentally friendly but also efficient in terms of energy density and charging speed. The use of hemp biomass in bioenergy production also offers a pathway to renewable energy, reducing reliance on fossil fuels and contributing to a circular energy economy.

### 3.7.4 Towards Holistic Metrics for Bio-Based Building Materials

Current building performance metrics, such as the U-value, inadequately capture hemp's multifaceted benefits, including thermal mass, moisture regulation, carbon storage, mould resistance, and construction waste avoidance. To fairly evaluate hemp and other bio-based materials, we propose developing a comprehensive "H-value" metric that integrates thermal, environmental, and health parameters.

This new metric would facilitate eco-certification schemes, green public procurement, and healthy building policies, aligning with the Renovation Wave

and Circular Economy goals. Recognising the full value of hemp-based materials will encourage their adoption and contribute to healthier, more sustainable urban environments.

### 3.7.5 Beyond the U-Value: Toward a More Appropriate Holistic Metric for Hemp-Based Materials

Current and widely used building performance metrics such as the **U-value** are inadequate for evaluating the full benefits of natural, bio-based materials such hempcrete, timber, straw or any of the other materials listed in section 3.7 above. U-values do not take into account the benefits of using such readily available and recyclable materials; they are based on steady-state conductive heat transfer and they overlook the dynamic and environmental aspects that are crucial for sustainable construction and human health.

### *3.7.5.1 Limitations of the U-Value*

The U-value fails to accurately represent the holistic performance of hemp-based construction materials because it:

o **Assumes a static heat flow model**, ignoring daily and seasonal temperature fluctuations and dynamic environmental conditions;

o **Does not consider thermal mass**, which allows hemp materials to absorb, store, and release heat gradually, contributing to passive thermal regulation and indoor comfort;

o **Ignores hygrothermal buffering**, the ability of hemp to regulate indoor humidity by absorbing and releasing moisture, enhancing occupant comfort and reducing reliance on mechanical ventilation;

o **Omits carbon sequestration capacity**, overlooking the critical climate mitigation role of hemp, which absorbs and stores significant amounts of $CO_2$ during its growth and use;

o **Overlooks zero chemical content and hypoallergenic nature**, key health benefits of hemp that contribute to better indoor air quality and occupant well-being;

o **Does not account for zero construction waste**, as hempcrete is recyclable, biodegradable, and typically waste-free during on-site application;

o **Fails to capture energy efficiency savings**, as hemp-based buildings often reduce demand for active heating, cooling, and mechanical ventilation through superior insulation, airtightness, and natural ventilation potential;

o **Neglects the material's resistance to mould**, a result of hemp's breathable, moisture-regulating properties, which prevent condensation build-up and support healthier indoor environments.

### 3.7.5.2 Proposing the H-Value: A Holistic Performance Metric

To address the limitations of the conventional U-value, we propose the development of a new standard—**the H-value** (H for *Hemp* and *Holistic*)—to more accurately assess the environmental, thermal, and health-related performance of hemp-based building materials.

The **H-value** would incorporate the following criteria:

✓ **Thermal Mass and Phase Shift –** The **H-value** would measure the building material's ability to absorb, store, and release heat over time, contributing to passive thermal regulation and improved energy performance;

✓ **Moisture Buffering Capacity –** The **H-value** would assess how well the material regulates indoor humidity, preventing dampness and enhancing occupant comfort;

✓ **Zero Chemical Composition & Hypoallergenic Properties –** The **H-value** would evaluate the absence of toxic additives and the material's suitability for sensitive users, promoting healthier indoor environments;

✓ **Carbon Sequestration Potential –** The **H-value** would recognise the biogenic carbon stored during the growth and lifecycle of hemp, supporting climate mitigation goals;

✓ **Zero Construction Waste –** The **H-value** would reflect the material's recyclability, biodegradability, and low-impact installation, minimizing waste during and after construction;

✓ **Material Breathability –** The **H-value** would account for the ability of hempcrete to allow vapour diffusion, improving indoor air quality and preventing condensation;

✓ **Mould Resistance –** The **H-value** would include the material's natural resistance to mould growth due to its breathability and moisture-regulating properties — key to long-term indoor health;

✓ **Energy Efficiency and Passive Ventilation Performance –** The **H-value** would quantify the potential reduction in heating, cooling, and mechanical ventilation demand, thanks to the high insulation value, airtightness, and natural ventilation characteristics of hemp-based buildings; and,

This **H-value** would offer a more comprehensive, science-based framework for evaluating bio-based building systems, aligning with sustainable construction goals and the need for healthier, low-impact living environments.

### 3.7.5.3 Policy Relevance

A shift toward holistic evaluation tools such as the proposed the **H-value** would:

- Enable **fairer comparisons** between bio-based and synthetic materials;

- Support **eco-certification and policy inclusion** of hemp materials in EU Green Deal frameworks;

- Foster **low-impact, healthy buildings** under the Renovation Wave and Circular Economy Action Plan; and,

- Align public procurement and building standards with **climate, health, and zero-waste objectives**.

### 3.7.6 Concluding Remarks on Hemp as a Construction Material in Cities of the Present and Future

Integrating hemp into the proposed EU Initiative and New Agenda for Citiesand into the  EU Waste Management Strategy offers a powerful, multi-sectoral solution to key environmental challenges, including waste reduction, carbon emissions, and resource inefficiency in cities, towns and urban areas.

As a regenerative, biodegradable, and low-impact material, hemp aligns seamlessly with the European Green Deal, the Circular Economy Action Plan, and climate neutrality targets. By recognising and supporting the hemp economy — through targeted policy inclusion, investment, and the adoption of holistic evaluation metrics like the proposed H-value outlined above — the EU can unlock the full potential of this underutilised resource.  This transition not only advances circularity and sustainability but also supports innovation, rural development, and public health across Member States. The time to act is now—hemp is not just a crop; it is a strategic tool for a greener, healthier, and more resilient Europe.

### 3.7.7 Other Possible Building Materials which are Renewable and Environmentally Sustainable

In section 3.7 above, we have briefly listed other possible building materials, in addition to hemp, which are environmentally sustainable, easily renewable, and can easily be recycled.  The following overview of these, with some additional information, may be useful.

### 3.7.7.1 Structural mass timber

Structural timber or mass timber material is manufactured glueing, doweling or nailing smaller pieces of wood together in order to form larger pieces, sufficiently strong to support a large building. The process results in a material with the strength of wood or concrete but is significantly lighter in weight.

Mass timber has generated plenty of excitement for its potential implications in sustainable construction. In 2019, Mjøstårnet, a tower in Norway, was certified as the world's tallest timber building at the time, at 18 storeys 85.4 metres in height. It has since been surpassed by Ascent, a 25-storey, 86.6-metre-tall tower in the US. Both of these buildings were created with mass timber.

Timber has the advantage of being a continuously renewable resource; timber used in buildings will lock up carbon for at least several decades; and, at the end of the building's life the timber can be reused for construction, converted to a secondary raw material by grinding, used as a source of heat or can even be added to soil in the form of biochar.

### 3.7.7.2 Rammed earth, clay blocks and cob

Clay is another versatile and renewable green material that can be easily sourced and has been used in building projects for hundreds of years. For the modern construction industry, the most promising application of this useful material is in the creation of clay bricks that are hard-wearing, recyclable, low maintenance and have strong thermal insulation qualities.

Along with having low embodied energy, clay bricks also align with the lean methodology, in that they enable the reduction of waste and can be easily sourced locally to a building site.

The process of building with rammed earth has been used for thousands of years. It involves ramming together a mixture of aggregates (such as gravel, clay and sand) into a formwork. This formwork can then be moulded to create walls, which, once dried, become solid. These walls are extremely durable, require little maintenance and can last for hundreds of years.

This ancient technique is naturally sustainable and energy efficient, as it involves using locally sourced materials and can be easily reused and recycled. It also has high thermal mass, meaning it's effective at absorbing and storing heat, which can help reduce energy usage and expenses.

Cob is made by crushing together subsoil, sand, straw, and sometimes lime. This natural building material has almost zero embodied carbon, and is both strong and durable, with the oldest known cob house in Britain dating back to the 15th century.

This sustainable material has been adopted and re-engineered by researchers to a new, modern mixture with the ability to absorb and trap heat, known as CobBauge. The goal is for this new mixture to become an effective alternative to concrete and a viable option for low carbon construction.

In very many parts of Europe, clay has the advantage of being locally available; and therefore the transportation costs, and carbon emissions resulting from transportation, are low. At the end of its useful life clay can be returned to the earth from where it has been dug.

From a city perspective, clay would have significant limitations, because its poor strength would not permit its use for the construction of tall buildings.

### 3.7.7.3 *Straw Bale*

Bales of straw are another sustainable material with potential energy saving benefits. It is already being used for insulation – it has three times the R-value (a measurement for heat resistance) of traditional insulation – and can be tied together with bamboo or wood to create walls.

From a sustainability perspective, bales of straw are 100% biodegradable, and have very low embodied energy. Straw has already been used in the construction of houses, theatres and university buildings, and these structures could stand for over a century if they're properly maintained.

From a city perspective, straw bale construction would have significant limitations, because its poor strength would not permit its use for the construction of buildings of more than one or two storeys in height.

### 3.7.7.4 *Recycled plastic and vehicle tyres*

Plastic – one of the most widely used, consumed and discarded substances on the planet – has a variety of applications in construction. The waterproof, corrosion-resistance and thermal insulation qualities make it an ideal material for the construction of houses, and while it does not have the strength of steel or even wood, it can be mixed with other materials to compensate for this.

Recycled plastic is used to build components like lumber, fencing, floor and roof tiles, bricks, concrete, and even gravel.

While end-of-life vehicle tyres most often end up in landfills, or they are shredded and burned as a co-fuel in power plants or cement plants, rubber has a variety of applications for construction, from landscaping, asphalt and flooring to potentially a sustainable replacement for traditional concrete. This new material, referred to as 'rubbercrete', is made by replacing the fine aggregate in traditional concrete with crumb rubber from used tyres.

While rubber would be unlikely as a suitable material for large scale construction, its use as an additive to asphalt in road building has many advantages, including longer service life, better traction, and greater skid resistance. In January 2014, Zero Waste Alliance Ireland researched and provided to the Irish Department of the Environment, Community and Local Government, a detailed technical assessment of how end-of-life vehicle tyres could be recycled and their constituents re-used.[83]

### 3.7.7.5    Recycled steel

Along with natural materials with low-embodied carbon, construction firms are beginning to recycle existing materials, with steel a prime candidate. Construction is already one of the biggest consumers of steel, and it is easy to recycle, with around 40% of all steel production involving the use of recycled material.

Recycled steel can be used to build structural components from beams, bars and columns. Steel buildings can be recycled almost entirely, with very little waste, and the resulting recycled steel can have the same strength and durability.

From a city perspective, the use of recycled for building construction would have almost no limitations. However, the high temperature required to re-melt the recovered steel would have an impact.

### 3.7.7.6    Recycled glass

Glass is another substance than can be reused and recycled in construction. Recycling it is involves far less energy consumption than producing new glass. It also reduces the need for virgin materials, and loses none of its strength of quality in the recycling process.

### 3.7.7.7    *Plant-based polyurethane rigid foam*

One of the most interesting eco-friendly building materials, polyurethane is a rigid foam made out of foamed polymers that, while prevalent in the construction industry, are problematic in terms of sustainability. Unfortunately, this material, widely used for the insulation of buildings, is made from petrochemicals and is difficult to dispose of.

Plant-based foams or 'biofoams' have emerged as a new alternative with a lower carbon footprint than traditional foam. They're made from a variety of natural fibres, including bamboo and hemp plants, and would be suitable in smaller buildings, or as building components and materials.

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[83] https://www.zwai.ie/resources/2014/tyres-and-waste-tyres/ Submission by Zero Waste Alliance Ireland to the Department of the Environment, Community and Local Government on Tyres and Waste Tyres (30 January 2014). See section 3.5.1 The use of crumb rubber to make more durable road surfaces.

### *3.7.7.8      Ferrock*

Ferrock is a building material occasonaly used as a substitute for cement. Created from a mixture of waste steel dust silica, it is both stronger than concrete and sustainable, as the process of producing it causes minimal damage to the environment.   Ferrock is also $CO_2$ negative – instead of emitting $CO_2$ when drying, it actually absorbs and binds to it.

## 3.8    Reducing the Environmental Cost of Construction Materials; Demolition or Deconstruction; Avoiding Construction Waste

### 3.8.1  The Environmental Footprint of the Construction Industry

In Ireland, construction and demolition processes generate 8.3 million tonnes of waste annually, a clear indication of the huge amounts of materials discarded or destroyed, most of which ends up in landfills, with only a very small proportion recycled.  Furthermore, 35% of Ireland's total material footprint is associated with the construction industry.  This footprint represents the resources needed to sustain the country's economy, including minerals, metals, wood, plastic and other materials.

Additionally, some 97% of the materials utilised in Ireland's construction industry are derived from "virgin" sources, for example, newly extracted or produced rather than recycled, contributing to environmental degradation and resource depletion.

Based on an aggregated study of materials data from 51 recently constructed buildings in Ireland across all typologies, concrete by far makes up the greatest mass used at 75% of all materials, representing 41% of $CO_2e$ emissions in new construction.[84]  Metals comprised only 7% of mass but 36% of emissions; and insulation, though with an insignificant mass, represented 6% of carbon emissions.  The remaining materials comprised 17% of mass and carbon emissions, primarily from glass, brick, tiles, and gypsum.

### 3.8.2  Reducing the Environmental Impact of Producing Construction Materials

Construction materials from renewable resources, including products from the bioeconomy, can replace a significant portion of high-carbon structural and insulation elements in buildings, and can provide a way for the agriculture sector to increase the value of its output by making crops and their by-products available

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[84]  IGBC, 2022. Building a Zero Carbon Ireland: Roadmap to Decarbonise Ireland's Built Environment across its Whole Life Cycle, Dublin: Irish Green Building Council.

for construction materials.[85] This, in turn, could contribute to reducing GHG emissions from agriculture while providing sustainable jobs across the country.

Including construction materials in the circular economy is an approach that reduces waste by utilising by-products that would otherwise remain unused, and have to be designated as industrial waste; and this approach also contributes to reductions in the embodied carbon of these materials.

For example, it is now possible to manufacture zero-carbon steel for construction, using recycled steel and renewable energy,[86] as demonstrated in the TATA Steel green steelmaking project.[87]

The use of waste materials in concrete production is now a global trend, creating what can be considered as "green" concrete, with the added benefits of reducing the quantities of naturally occurring raw materials needed, while at the same time producing more a sustainable concrete that has better mechanical properties.

One such technical development is that the clinker content of concrete can be reduced by using Ground Granulated Blast-furnace Slag (GGBS), an otherwise unused by-product of steelmaking. Other additives to concrete which can reduce the huge adverse impact of cement production include recycled waste glass powder as a partial replacement of sand and cement;[88] adding cement recovered from recycled concrete using smart crushers,[89] and even biochar,[90] while recycled bauxite residue (red mud) may be added to the cement production process, in order to utilise a potentially dangerous material requiring long-term storage.[91]

Using bauxite residue in Portland cement has been explored for over 80 years with many promising technical studies and several successful large-scale

[85] Stegmann, P., Londo, M. & Junginger, M., 2020. The circular bioeconomy: Its elements and role in European bioeconomy clusters. Resources, Conservation & Recycling. *Resources, Conservation & Recycling*: X, 6(2590-289X), p. 100029.

[86] Halter, F. et al., 2023. Recyclable metal fuels as future zero-carbon energy carrier. *Applications in Energy and Combustion Science*, **13** (2666-352X), p. 100100.

[87] https://www.tatasteeluk.com/corporate/news/plans-approved-for-electric-arc-furnace and https://www.tatasteeluk.com/green-steel-future/planning

[88] Muhedin, D. A. & Ibrahim, R. K., 2023. Effect of waste glass powder as partial replacement of cement & sand in concrete. *Case Studies in Construction Materials*, **19** (2023), p. e02512.

[89] Abraham T. Gebremariam, Francesco Di Maio, Ali Vahidi, and Peter Rem, 2020. Innovative technologies for recycling end-of-Life concrete waste in the built environment. *Resources, Conservation & Recycling* **163** (2020) 104911.

[90] Sachini Supunsala Senadheera, Souradeep Guptac, Harn Wei Kua, Deyi Hou, Sumin Kim, Daniel C.W. Tsang, and Yong Sik Ok, 2023. Application of biochar in concrete – A review. *Cement and Concrete Composites* **143** (2023) 105204.

[91] Feng, L.; Yao, W.; Zheng, K.; Cui, N.; Xie, N., 2022. Synergistically Using Bauxite Residue (Red Mud) and Other Solid Wastes to Manufacture Eco-Friendly Cementitious Materials. *Buildings* **2022**,12,117. https:// doi.org/10.3390/buildings12020117.

commercial initiatives. The iron and aluminium compounds contained in the bauxite residue provide valuable additions in the production of Portland cement at a low cost. From the evidence that cement plants are already using bauxite residue on an industrial scale, it is clear that this waste material can satisfactorily be used in cement clinker manufacture with only slight changes to their operating process.[92] The use of bauxite residue (red mud) for road construction has been tested in an EU-funded project at the Irish Cement Ltd., production plant at Mungret, County Limerick.[93]

### 3.8.3  Demolition or Deconstruction, and Waste Reduction or Elimination

Demolition of unused or end-of-life buildings significantly contributes to total carbon emissions because of the need to extract, process and transport the  new replacement materials, in addition to the environmental impact of transporting and disposing of significant quantities of unwanted demolition waste. When a structure is demolished, it is usually completely destroyed – a linear process, at the lowest point in the Waste Hierarchy, in contrast to reuse, repair and recycling.

While demolition focuses on clearance of a building site as quickly as possible, deconstruction emphasizes sustainable practices by maximizing resource recovery and minimizing waste. By choosing the appropriate method for a given project, a balance can be achieved between environmental concerns, resource efficiency, and the objective of completing the new construction project within an agreed or reasonable time and cost.

Unlike demolition, which often involves the indiscriminate razing of disused structures, deconstruction prioritises the careful disassembly of buildings to salvage valuable materials. Deconstruction is a slower process where the material is stripped a piece at a time to try and reclaim it before taking down the structure. Materials are either preserved for future use or broken down and recycled.

The best way to ensure maximisation of reuse and minimisation of waste is to 'Design for Circularity', or to 'Design for Deconstruction' (as proposed by the Ieish Green Building Council), at the early concept stage of a construction project, to enable the easiest recovery and maximum reuse of the building's components and materials at the end of the structure's useful life, after other potential

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**92**  Opportunities for using bauxite residue in Portland Cement clinker production. International Aluminium Institute, March 2020.https://international-aluminium.org/wp-content/uploads/2024/03/opportunities_for_use_of_bauxite_residue_in_portl.pdf

**93**  Michael Allen, 2024.  The riches in Europe's mountains of metals waste – Waste from the production of aluminium, nickel and other industrial materials offers the EU an opportunity to advance its recycling goals. Horizon, the EU Research and Innovation Magazine, 12 April 2024, European Commission, 2024.

purposes of the building have been explored and found unsuitable. Materials should be recovered from demolition at their highest value.[94]

The direct use of materials and products with minimal loss of value and only minor interventions involves checking, cleaning, repairing, and refurbishing whole items or components. Reuse options for re-integrating materials into a new project, can be through resale, donation, or off-site reuse.

Where demolition is unavoidable or where extensive renovation is required, the EU Construction & Demolition Waste Management Protocol (2016), including guidelines for pre-demolition and pre-renovation audits of construction works, should be followed. This outlines key processes such as identifying hazardous materials and assessing reuse potential through pre-demolition audits and employing selective demolition to segregate waste safely.

The Protocol also emphasises transparent waste logistics, enabling the tracking of materials throughout their life cycle. This was developed to improve confidence in C&D waste management processes and increase trust in reused products and recycled materials, avoiding contamination of materials through quality assurance schemes.[95]

Pre-demolition and pre-renovation audits involve a detailed building assessment before any work begins, identifying hazardous substances, mapping out materials that can be safely removed, and evaluating their potential for reuse or recycling. These audits enable more selective demolition, allowing valuable components like steel, timber, bricks, and fixtures to be recovered in good condition rather than being sent to landfill or downcycled. By providing clear information about the types, quantities, and locations of materials, audits facilitate better planning for reuse, improve material recovery rates, and support a more circular approach within the construction sector.[96]

Unfortunately, one of the barriers in Ireland to re-using and recycling building materials from deconstruction is the regulatory status of reused materials. Under Ireland's implementation of the EU Waste Framework Directive, any material that has reached its end-of-life is classified as waste when removed from the site, even if it still has reuse potential. To change this classification, a potential user of the material must go through a lengthy and expensive end-of-waste or by-

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[94] IGBC, 2022. Building a Zero Carbon Ireland: Roadmap to Decarbonise Ireland's Built Environment across its Whole Life Cycle, Section 7.2, Ensure Greater Reuse and Recycling, pp 45-50. Dublin: Irish Green Building Council.

[95] European Commission, 2016. EU Construction & Demolition Waste Management Protocol, including guidelines for pre-demolition and pre-renovation audits of construction works. Updated edition 2024.

[96] IGBC, 2022. Building a Zero Carbon Ireland: Roadmap to Decarbonise Ireland's Built Environment across its Whole Life Cycle, Section 7.2.3, Moving Up the Waste Hierarchy, p. 49. Dublin: Irish Green Building Council.

product application process with the EPA. This process has been simplified for some materials with the development of national end-of-waste criteria for soil and stone, and recycled aggregates, though in the case of aggregates, their use is considerably restricted.

Additionally, Ireland lacks the infrastructure, storage areas, and collection points needed to support reuse and recycling. Few take-back schemes exist where companies collect used products or leftover materials to reuse them.

### 3.8.4 Suggestions for Enabling the Prioritisation of Deconstruction over Demolition, and for Construction Waste Reduction and Elimination

Suggestions for overcoming some of these barriers, and ensuring the prioritisation of deconstruction over demolition include:

- ✓ Tax reforms which encourage refurbishment instead of demolition, as proposed by the Chartered Institute of Building (CIOB);

- ✓ Use pre-demolition audits in order to identify materials in proposed demolition projects that can be recycled or downcycled;

- ✓ Streamline re-certification systems to enhance the credibility and adoption of pre-used products and materials;

- ✓ Specifically in Ireland, carry out a full review of the implementation of Articles 27 & 28 of the Waste Framework Directive, to better support reuse, ensuring that the EPA has sufficient resources to process Article 27 & 28 applications quickly and smoothly, and the fee for doing so is not prohibitive;

- ✓ Develop the market for secondary materials through collaboration between the Government and industry to streamline the implementation of Articles 27 (By products) and 28 (end of waste);

- ✓ Develop physical and digital marketplaces, as well as targets for reused materials in procurement;

- ✓ Support the development of secondary raw materials depots and marketplaces to facilitate reuse (publicly operated and/or facilitated), potentially co-locating in Eco-business parks with bioprocessing and EPR collection points to enable company clustering;

- ✓ Provide further certainty to industry on how the reuse of material can be supported and facilitated in line with Building Regulations, particularly for major building elements such as precast flooring, facades, etc.;

✓ Develop a legal framework for a Digital Building Logbook to capture and centralise data, hence facilitating reuse, with the potential for cross-referencing to other legislative requirements, such as the EPBD and the CPR;

✓ Leverage financial incentives for pre-demolition audits, pre-renovation audits and local recycling;

✓ Broaden the mandate to address circularity metrics and minimum requirements;

✓ Develop a national construction & demolition use hierarchy as an output to set out preferred options for the management of C&D waste resources;

✓ Undertake an ongoing review of policies, standards and guidelines to increase circular design principles in concrete, steel and other material value chains, including European Standards adopted as Irish Standards;

✓ Create Material Passports and building logbooks to include all the materials that are included in a product or construction during its life cycle to facilitate circularity decisions in supply chain management, and promotion of the use of digital material passports for tagging and tracking along the full lifecycle of a product, material or system; including material passports for component and assembly labelling and identification;

✓ Create quality criteria for secondary raw materials and their provisioning processes, as well as clear requirements (e.g. obligatory recycled quantities in the products) and regulations on their use;

✓ Establish targets and agreements for the amount of renewable or secondary raw materials in new products within the framework of existing industry agreements;

✓ Fund research and pilot projects focused on reducing Critical Raw Materials (CRM) dependency through material substitution, product redesign, and greater efficiency in CRM use;

✓ Revise the Circular Economy Strategy to include specific objectives and actions related to the sustainable management of CRMs, aligning with the EU Critical Raw Materials Act; and,

✓ The construction industry should be strongly encouraged to invest in technology to increase the value of recovered materials from demolition, e.g., smart crushers to recover cement from concrete, and robotics to recover building elements.

While the above suggestions by the Irish Green Building Council are primarily aimed at improving the circularity of buildings in Ireland, replacing demolition by deconstruction, minimising construction and demolition waste, and maximising the recovery and reuse of materials and objects from end-of-life buildings and other similar structures, it is our submission that a large proportion of these suggestions are appropriate for inclusion in the European Commission's proposed Initiative and New Agenda for cities.

Cities are in a constant state of flux, of development and re-development, in most cases involving the changing of use of buildings, and very often the replacement of buildings; and therefore any approach or procedure which minimises the impacts of these activities on the environment, and which reduces the need for importation of critical raw materials, should be considered as a desirable, or even an essential, policy.

## 4.  CONCLUDING OBSERVATIONS

Urban mobility, biodiversity and the use of sustainable and renewable materials should be the foundation pillars of Europe's cities and large towns, supported by the New Initiative and proposed New Agenda for cities.

This requires a shift away from car-dominated, wasteful systems toward efficient, circular, and people-centred transport networks. The Commission must empower cities with the funding, authority, and regulatory tools to lead this transition—from transport infrastructure to behavioural culture, from logistics to biodiversity.

A city-centric approach to transport reform will not only help meet emissions targets but create cleaner air, quieter streets, and more connected communities. By putting equity and ecological resilience at the heart of mobility policy, the EU can drive a transportation revolution for future generations.

However, achieving the EU's climate and ecological goals requires more than local goodwill, it demands coordinated action across all governance levels. The case of Ireland illustrates how over-reliance on local councils without adequate national frameworks and resources can lead to fragmented implementation, delays, and missed opportunities for meaningful change.
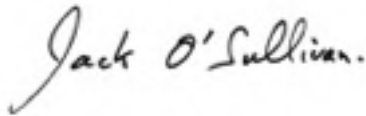
To unlock the full potential of sustainable urban transport, nature-based solutions and net-zero carbon cities which would produce near zero waste, the European Commission must drive the standardisation of policies and metrics, develop new metrics where necessary (as proposed in section 3.7.5.2 above), strengthen enforcement through early expert engagement, and provide clear incentives and support structures.  Empowering cities and their local authorities with the tools, funding, and regulatory backing needed to act decisively will accelerate the transition to efficient, circular, and biodiverse urban environments.

By integrating biodiversity as a mandatory planning requirement and embedding holistic approaches, such as the H-value for building materials and the 15-minute city model, the EU can lead a transformative shift toward healthier, greener, and more resilient cities for all citizens.  If these recommendations are implemented, the result will be beneficial for all city residents, for visitors to these healthy cities, and beneficial for the global climate.

Cities should also be considered as the best locations for innovating, testing and demonstrating circularity of the built environment, and for ensuring that the planning, design and construction of new building, and the re-purposing of existing buildings which can no longer serve their original purposes, is carried out in a way which minimises environmental impact.  Construction materials which are derived from renewable resources, which can be obtained locally, and which have low embodied energy, should be prioritised.

When a building has reached the end of its useful life, and no other purpose can be found for it, deconstruction should be prioritised and should become the norm, so that complete demolition becomes a rare exception.

Finally, it is our submission that the residents of Europe's cities should be able to live comfortably within the natural flow of energy from the sun and plants, producing no wastes which cannot be recycled back into the earth's systems, and guided by new economic values which are in harmony with nature and with personal and ecological values.


Jack O'Sullivan

**Zero Waste Alliance Ireland**

26 May 2025


This submission was researched and written by Olena Larionova (ZWAI member), Cormac Forlot (ZWAI member) and Jack O'Sullivan (ZWAI founder and Vice-chair); with additional material by Pamela Bartley (ZWAI member), and further research and final editing by Jack O'Sullivan.  Thanks are due to Dalia Smelstoriūtė-O'Sullivan for assisting with formatting of the text and preparation of the contents pages.

European Commission

## CALL FOR EVIDENCE
## FOR AN INITIATIVE (without an impact assessment)

This document aims to inform the public and stakeholders about the Commission's work, so they can provide feedback and participate effectively in consultation activities.
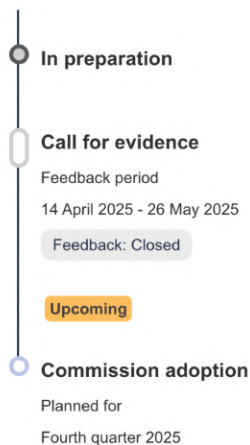
We ask these groups to provide views on the Commission's understanding of the problem and possible solutions, and to give us any relevant information they may have.

| TITLE OF THE INITIATIVE | EU agenda for cities |
|---|---|
| LEAD DG – RESPONSIBLE UNIT | DG Regional and Urban Policy – Unit 03 (Cities, communities, people) |
| LIKELY TYPE OF INITIATIVE | Communication |
| INDICATIVE TIMING | Q4-2025 |
| ADDITIONAL INFORMATION | - |

*This document is for information purposes only. It does not prejudge the final decision of the Commission on whether this initiative will be pursued or on its final content. All elements of the initiative described by this document, including its timing, are subject to change.*

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Cities – new policy agenda

Have your say - Public Consultations and Feedback  >  Published initiatives  >  Cities – new policy agenda

**In preparation**

**Call for evidence**

Feedback period

14 April 2025 - 26 May 2025

Feedback: Closed

Upcoming

**Commission adoption**

Planned for

Fourth quarter 2025

## About this initiative

**Summary**

This initiative will put forward an EU agenda for cities that takes stock of EU initiatives and instruments in order to streamline the current support for cities.

It will strengthen the EU's ambition for cities by improving processes through which issues facing cities can be better integrated into future EU policymaking.

**Topic**

Regional policy

**Type of act**

Communication

## Call for evidence

Feedback: Closed

Feedback period

14 April 2025 - 26 May 2025  (midnight Brussels time)

View feedback received >

Call for evidence - Ares(2025)3030877

**M Gmail**

<span style="color:red">**Appendix II**</span>

## 'Have your say' - Acknowledgement of receipt

**European Commission - 'Have your say'** <DO-NOT-REPLY@ec.europa.eu>      26 May 2025 at 22:55
To: jackosullivan2006@gmail.com

European Commission     **Have your say**

Dear Sir or Madam,

Thank you for submitting your feedback on Have your say.

We acknowledge receipt of your feedback which may be used to improve the proposed legislation.

https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14615-Cities-new-policy-agenda/F3558649_en

To make corrections, you can unpublish your feedback and send a new one, if the feedback period is still open.

This is an automatic notification message. Please do not reply to it.

With kind regards,

**European Commission**
Secretariat-General